University of Alberta

Knowledge in Literature

With special reference to Flowers in the Mirror *and* Gulliver's Travels

by

Cao Haiying ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial
Fulfillment of the requirements for the degree of Master of Arts

in

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *Knowledge in Literature with special reference to* Flowers in the Mirror *and* Gulliver's Travels submitted by Cao Haiying in partial fulfillment of the requirements for the degree of Master of Arts in Comparative Literature.

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ABSTRACT

This thesis makes a study of the phenomenon of knowledge in literature. Important aspects of knowledge are addressed in Chapter One. Two novels, one by a Chinese writer Li Ruzhen and one by an English writer Jonathan Swift, are selected to be the samples of this study. In Chapter Two, introduction is given to the Chinese writer Li Ruzhen and his novel *Flowers in the Mirror*. Six sections are given to discussing different categories of knowledge and analyzing their functions. Chapter Three is devoted to Swift and his *Gulliver's Travels*. Six sections are also given to a discussion of varieties of knowledge employed by the author. The functions of each is discussed. In Chapter Four, two common aspects of the two authors are pointed out and four functions of knowledge in literature are further clarified. The whole thesis gives its reader a general perspective of this important literary phenomenon.

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For all knowledge and wonder (which
is the seed of knowledge) is an impression
of pleasure in itself.
— Francis Bacon, *Advancement of
Learning*. Bk.i.

Who loves not knowledge? Who shall rail
Against her beauty? May she mix
With men and prosper! Who shall fix
Her pillars? Let her work prevail.
— Tennyson, *In Memoriam.*Pt.cxiv.st.1.

Chapter One: The Problem of Knowledge in Literature and What Knowledge Is

I. Knowledge in literature

Traditionally, literature is considered to have two main functions. One is to entertain, the other is to teach. About the pedagogic function of literature, there are two aspects. One is to teach a moral, the other is to teach a knowledge. In Chinese literature, this heritage of emphasizing both functions has a long history. When talking about poetry, Confucius said: "小子！何莫學夫詩？ 詩可以興，可以觀，可以群，可以怨，邇之事父，遠之事君，多識於鳥獸草木之名.[1] [Young men, why do you not study Peotry? It can be used to inspire, to observe, to make you fit for company, to express grievances; near at hand, (it will teach you how) to serve your father, and (looking) further, (how) to serve your sovereign; it also enables you to learn the names of many birds, beasts, plants, and trees. (trans. James Liu 109)]" From this quotation we can see that literature has a function of teaching general knowledge ("it also enables you to learn the names of many birds, beasts, plants, and trees.") besides other functions.[1] Knowledge also occupies an important place in the European literary tradition. De Quincey holds that literature has "two separate offices....There is , first, the literature of *knowledge*; and, secondly, the literature of *power*. The function of the first is— to *teach*; the function of the second is— to *move*"[2] (5). In Daniel Defoe' s *Robinson Crusoe*, for instance, we can find much knowledge in natural science. When Crusoe arrives on the island, he surveys the land and finds many plants and animals of which he gives a quite detailed description. He also describes the seasons on the island. The narrator even puts this material in a table to let the reader gain a better understanding.

---

[1] Quoted from Yang Shuda 楊樹達. *Annotations on Confucius'* Analects論語疏證. 454-457.

Robert Mayer finds that "The presentation of this kind of ' data' both within the narrative account and in tabular form establishes a kinship between *Crusoe* and such works as Dampier' s *New Voyage* and various histories by Crouch" (188). Dedicating his work to the president of the Royal Society, Dampier "suggests that perhaps his work does not merit ' a place among your more Curious Collections,' but finally offers his ' plain piece' with its rich facticity out of a ' hearty Zeal for the promotion of useful Knowledge' " (Mayer 188). This is quite similar to the Chinese idea mentioned above. We can say to some extent that it is this "hearty zeal for the promotion of useful knowledge" that pushes many writers to include knowledge in natural science in their literary works. The tradition is not lost by any means; a French writer, Michel Tournier , has recently undertaken to adapt *Robinson Crusoe* to the modern eye. The approach to knwoledge is not unsimilar in its scope and accuracy (see Michel Tournier. *Vendredi, ou*

---

[1] See Wang Qiongling 1.

[2] This second function given by De Quincey refers to the effect caused by literature on human passions, desire and genial emotions, as he states on the same page: "The first speaks to the *mere* discursive understanding; the second speaks ultimately, it may happen, to the higher understanding or reason, but always *through* affections of pleasure and sympathy."

les Limbes du Pacifique (Paris: Seuil, 1967, translated as *Friday, or the Other Island*)." Yet we have to admit that imaginative writer are not scientists themselves, though in their works they do propagate scientific ideas.

Scientific knowledge is only a part of knowledge. Knowledge consists of many categories (see V. The scope of knowledge in this chapter). Various categories of knowledge can be used by authors to achieve certain aims. Knowledge used in literary works can enrich these works and add to their power to appeal to readers. Hence, in many great literary works knowledge takes an important role.

It is obvious that some writers are more inclined to emphasize a scientific approach in their literary works and thus achieve a certain purpose. On the other hand, others prefer placing the emphasis on the human psyche. Whether authors focus on external reality or on human reality, the question of knowledge remains. This thesis will focus on the interplay of knowledge in literature.

A passage from the "Introduction"[1] to the English version of the Chinese novel *Fortress Besieged* by the famous Chinese writer and comparatist Qian Zhongshu 錢鍾書 reads like this:

> *Fortress Besieged* is also a scholar's novel. Throughout the novel, particularly in Section I, references are made to Chinese and Western literatures, philosophy, logic, customs, laws, educational systems, and other areas such as foreign language and feminism. The author's knowledge is so wide that he is probably modern China's foremost "scholar novelist," a designation for a special class of literary men.
>
> (Nathan K. Mao xviii)

This passage not only raises the problem of knowledge in literature, but also leads to the conclusion that various categories of knowledge can be employed by writers. Many authors will consciously (or unconsciously) employ their knowledge in their literary works, and some liteary works are indeed well known for the rich knowledge they offer, such as *Fortress Besieged*, *Journey to the West*, *A Dream of Red Mansions*, *The Scholars*, *Flowers in the Mirror*. These works are not famous for the all-round achievements they have arrived as creation of characters, well-knit plot, sharp satire, oginality in thoughts, etc; however, knowlege employed by the authors in these works also contributes to the all-round achievements.

---

[1] This "Introduction" is written by Nathan K. Mao, one of the two translators.

Some literary works appear to have so much knowledge in them that besides the usual plots, characters, and literary devices, they seem to be small encyclopedias. For example, the great Chinese novel *A Dream of Red Mansions*, along with its masterfully knit plots and its large cast of characters, offers a veritable compendium of knowledge. In the novel, there exists a lot of descriptions of geography and economics, explanations of religions in China including both Taoism and Buddhism. Many characters have titles of various kinds; these titles are not usually known and the use of them requires the author's knowledge in the related fields. Reading this novel, the reader can also gain knowledge in drama and music, as well as folk customs, garments and food.

For example, in Chapter 43 of the novel, we read about Granny Liu who lived in the country and who had not seen much of the world. But given the chance to visit Jia's family, a noble and rich family in the capital city, she was invited to taste a kind of dish made of egg-plant. Although she was familiar with this kind of common vegetable, she could not believe that the dish was made with egg-plants. Asking for more and

> savouring it slowly Granny Liu said: "It does taste a little like egg-plant, but still it's quite different. Tell me how you prepared this, so that I can cook some for myself."
>
> "It's quite simple," replied Hsi-feng, twinkling. "Pick some early egg-plant and peel it, keeping only the best part, which must be cut into small pieces and fried with chicken fat. Then get some chicken breast fresh mushrooms, bamboo shoots, dried mushrooms, spiced dried bean curd and various kinds of preserved fruit. Dice these too and boil them with the egg-plant in chicken soup, then add sesame oil and pickles and store it in a tightly-sealed porcelain jar. That's all."
>
> Granny Liu shook her head and stuck out her tongue in amazement.
>
> "Gracious Buddha! No wonder it tastes so good, cooked with a dozen chicken." (Tsao (Cao)[1] vol 2: 3)

Knowledge is not restricted to food. Here, the reader is given a description of garments:

> So before taking seats they (Pao-yo, the hero in the novel and several waiting girls, Fang-kuan was one of them) first divested themselves of their outer things

---

[1] In this thesis, Hanyu Pinyin is used to refer to Chinese characters. When quoting from works which use Wade Giles romanization system to refer to Chinese characters, Pinyin will be given in a parenthesis after it.

> and had soon laid aside their formal gowns and trinkets, leaving their hair to hang free and wearing only long skirts and bodices. Pao-yo (the hero in the novel) himself stripped down to a scarlet linen jacket and green dotted satin trousers, letting the ends of the trouser legs hang loose. Leaning on a jade-coloured gauze cushion filled with all sorts of fresh rose and peony petals, he started playing the finger-guessing game with Fang-kuan.
>
> Fang-kuan who had also been complaining of the heat, had on only a short lined satin jacket—a patchwork of red, blue and jade—coloured squares, a green sash, and pink trousers with a floral design left untied at her ankles.
>
> (Tsao (Cao)vol 2: 377-8)

This kind of detailed descriptions presents a very true picture to the reader, adding charm to the novel and also supplying him a chance to learn about the way people dressed at the time. This is also a kind of knowledge. The author, to present such knowledge in his literary work, must have a rich knowledge in every aspect of contemporary society which he might have acquired by study and observation throughout his life.

To gain knowledge so that it can be employed in his literary work, a writer needs to have a strong interest in knowledge and be a good learner and observor. He knows that he cannot hold all the knowledge obtained by mankind, but he is an insatiable pursuer of knowledge. These writers have to become "the true lover and seeker of knowledge" as Rousseau stated (qtd. in Jones 24). Jones elaborates that "A new star in the sky, a strange bird in the garden, or an unaccountable streak of light in a cloud chamber immediately arouses our attention, evokes our wonder, and stimulates us to thought" (Jones 24). It is often that when a writer has acquired much knowledge through his life-time study, he would, consciously or unconsciously employ his knowledge in his literary works.

In the Qing dynasty of China, there appeared a novel which was famous for the knowledge interwoven in it. It is *Flowers in the Mirror* written by Li Ruzhen (c. 1763—1830). This novel is often considered as one in which the author deliberately showed off his knowledge. The famous Chinese writer and critic Lu Xun 魯迅 makes his comments on this novel as "蓋以爲學術之匯流，文藝之列肆，然亦與萬寶全書爲鄰比矣 [it is a convergence of knowledge and a store of arts, yet it is quite close to a practical encyclopedia. (Lu Xun 403, my translation)] " Lu Xun, however, added that "惟經作者匠心，剪裁運用，故亦頗有雖爲古典所拘，而尚能綽約有風

致者 [with the author' s ingenuity and after his much pruning and cultivating, we can still find much that is graceful and charming in this novel though the author is bound to some degree by classicism. (Lu Xun 403, my translation)] "

In the European literary tradition, Jonathan Swift' s *Gulliver's Travels* is also well known for the rich knowledge it displays and thus offers an excellent point of comparison. In the following chapters I propose to look and analyse the different kinds of knowledge exhibited in the work of the two authors. So far, this problem has received little attention in scholarly literature and I aim to show that for certain periods and for certain types of literature, if not the body of literature, it is an essential aspect of literary production.

In addition, scholars have done some comparative studies of the two books in terms of travle literature, Utopian ideas and satires, thus an added qualification for bringing the two authors close to each other. A Chinese comparatist Liu Jiemin 劉介民 makes the point in his *Comparative Literature Methodology*:

> 《鏡花緣》與《格列佛游記》都是按照本民族的文學傳統而創作的。但是，兩部作品時隔百年，地差萬里，却在很多方面存在着不謀而合的相似。在内容主題，體裁選擇，創作構思及藝術手法等都存在着類同性。[*Flowers in the Mirror* and *Gullivers Travels* were created by the authors according to their own national literary heritages. Yet, though the two books appeared in two periods of time with a difference of about one hundred years and in two countries that are ten thousand *Li* away from each other, they share similarities in many aspects without mutual influence. They enjoy affinity in themes, contents, genre, plot creation and artistic techniques. (My translation)]
> (253)

This thesis consists of four chapters. In Chapter One, we raise the problem of knowledge in literature and discuss what knowledge is. In Chapter Two, we discuss the forms of knowledge in *Flowers in the Mirror* and the functions played by related knowledge. In Chapter Three, we discuss the forms of knowledge in *Gulliver's Travels* and the functions. In Chapter Four, we shall try to reach some conclusions regarding the function of knowledge in literature.

Having discussed the matter of knowledge in literature it is nevertheless necessary, before proceeding to a study of its manifestations in the two works surveyed, to investigate the very notion of knowledge itself

II. What is knowledge?

What is knowledge? In very simple words: Knowledge is what we know of the world. If we open any dictionary or encyclopedia, we can see there are always more than one explanations related to knowledge. For example, in *Webster's Third New International Dictionary*, besides the archaic usages, the definitions of "knowledge" are given as:

> ... 2: the fact or condition of knowing **a** (1): the fact or condition of knowing something with a considerable degree of familiarity gained through experience of or contact or association with the individual or thing so known... (2): acquaintance with or theoretical or practical understanding of some branch of science, art, learning, or other area involving study, research, or practice and the acquisition of skills... **b** (1): the fact or condition of being cognizant, conscious, or aware of something... (2): the particular existent range of one's information or acquaintance with facts: the scope of one's awareness: extent of one's understanding... **c**: the fact or condition of apprehending truth, fact, or reality immediately with the mind or senses... **d**: the fact or condition of possessing within mental grasp through instruction, study, research, or experience one or more truths, facts, principles, or other objects of perception: the fact or condition of having information or of being learned or erudite... 4 **a**: the sum total or what is known: the whole body of truth, fact, information, principles, or other objects of cognition acquired by mankind...

From the above quotation we can see that, firstly, there is a knower, then there is the known. That is to say, man is the knower; through his observation, experiment, reasoning, study, research, etc., he reaches the known. Obviously, one has to learn to know. Secondly, there is a distinction between the knowledge acquired by one man and the knowledge acquired by mankind. We have to note that any one man is related to a society and according to the sociology of knowledge, human knowledge is embodied in "styles of expression and the character of ideas of systems of thought" which "are related to different social contexts" (*Harper Dictionary of Modern Thought* 334). A writer can only make use of the knowledge available in his social context.[1]

III. Man has to learn to acquire knowledge

One of the distinctions that makes man different from other animals is that man can accumulate knowledge and pass it on to the next generations. This observation is particularly useful to Newton who says, "If I have seen farther it is by standing on ye shoulders of Giants" (qtd. in Gjertsen 38). The "Giants" he refers to are obviously the scientists who preceded him. It is by absorbing the knowledge passed over by them that Newton could make some further discoveries. Philip Chapin Jones also quotes Newton as saying:

> Nature did not make human brains first, and then construct things according to their capacity of understanding, but she first made things in her own fashion and then so constructed the human understanding that it, though at the price of great exertion, might ferret out a few of her secrets. (qtd. in Jones 47)

Newton' s emphasis on the importance of man' s effort to obtain knowledge shows that knowledge does not enter man' s mind by itself but has to be learnt. Only through study can knowledge be acquired.

In China, since ancient times, study has been taken as a very important thing. Confucius said: 生而知之者上也，學而知之者次也，困而學之又其次也，困而不學，民斯爲下矣 [those who know by birth are the supreme, those who know by learning are the second good, those who learn when they are in difficulties are the third good, those who never learn even when they are in difficulties are the lowest. (qtd. in Yang Shuda 433, my translation)]. Even though Confucius admitted that there were some people who could learn by birth (he called them sages), he did not declare that he himself was one of them. To the contrary, he said he had to learn to know. That he classified people by their attitude toward learning shows what emphasis he laid on learning. In his idea, only those who try to learn and enrich their knowledge are respectable people, those who do not want to learn are the lowest people. Discussing "The Problem of 'Knowledge' and 'Action' in Chinese Thought since Wang Yang-ming", David S. Nivison, refers to a Chinese scholar named Hsu Kan 徐幹 (171—218). Hsu held that "study" is the Sage's highest duty. "Study" is the "bright sun" of the mind because it can dispel human ignorance (Nivison 114). Such is the attitude of the Chinese scholars toward study. With this tradition, there appeared in every dynasty many scholars who acquired a wealth of knowledge.

---

[1] The explanations about the mechanism of a flying vehicle given respectively by Li and Swift form a good example for this point of view. Li's flying chariot was driven by copper wheels and Swift's flying island was driven by magnetism.

In a similar manner, European scholars also stress the importance of pursuit of knowledge. Daniel Webster, in his well-known address at Bunker Hill Monument in 1825, compared knowledge to the sun: "Knowledge, in truth, is the great sun in the firmament. Life and power are scattered with all its beams" (qtd. in Stevenson 1055). I can remember seeing a picture of Academy on the front cover of an issue of a magazine; though I tried with great efforts, I could not find that magazine now. In the picture, some students headed by Plato were lying on the ground or the floor, deep in thought, some were involved in hot discussion while walking, and some were listening carefully to their instructors. How devoted they were! I was deeply touched by the picture at the time so that they left a long lasting impression in my mind. The famous European thinker Francis Bacon had a very high regard toward the study of knowledge and he proudly declared that "I have taken all knowledge to be my province" (*Letter to Lord Burghley*, 1592. [qtd. in Stevenson 1055]). And Thomas Ingelend even considered that "A man without knowledge, an' I have read, May well be compared to one that is dead (*The Disobedient Child.* See *Ignorance: Better Unborn than Untaught.* [qtd. in Stevenson 1056]).

Bacon had a famous saying: "Knowledge is power" (*De heresibus*. qtd. in Evans 369). A very good example of this is Robinson Crusoe's adaptation on a lonely island. Robinson being an Englishman is not accidental. At the time, England was the most advanced country in scientific development. As Clifton Fadiman comments in "An Afterword" to *Robinson Crusoe*: "He (Daniel Defoe) didn't write it for them (the children), but for the sober middle-class Englishmen whose virtues... are revealed in Crusoe himself" (Defoe 348). When Robinson was thrown upon the island by his fate, he seemed to be the first human beings on earth. He did not have anything except those he brought to the island from the wreck of the ship. Yet, as an Englishman with certain education and experience, he had good knowledge of survival. He first lived in a cave, but his knowledge of earthquake made him build a more safe shelter. He knew how to make use of the plants and animals for his life. He stored fruits and meat for the time when food was hard to find. He observed the rhythms of seasons to find the best time for him to spread the seeds and finally he developed an agriculture on the island. He tamed wild animals and built up his livestock farm. He came to a barbarous island and left it a civilization. All these were achieved by his making use of knowledge. Interestingly, there were other Europeans coming to the same island, and their attitude toward surviving on the island was quite different from Robinson. That was the Spanish captain betrayed by his crew and was set on the island with another two companies. When he was found by Robinson, he said, "I was commander of that ship; my men having mutined against me... at last have set me on shore in this desolate place, ... where we expected to perish (we underline), believing the place to be uninhabited, and know not yet what to think of it" (Defoe 288-9). Such is the power of knowledge. With knowledge of survial, Robinson could make the desolate island prosperous; without it, the Spanish captain and his companies only expected to die.

IV. Historical limitations of knowledge

In the time of Warring States (475-221 B. C.), a famous thinker Zhuang Zi 莊子 (369-286 B. C.) said: 朝菌不知晦朔，蟪蛄不知春秋 [1][A certain fungus called Zhaojun (has such a short life that it) does not know the beginning or the end of a month; a certain insect called Huigu (has such a short life that it) does not know the Spring and the Summer. (my translation)]. Zhuang Zi's words pointed to the fact that man's knowledge is limited by his historical situation. This idea was shared by the sociology of knwoledge. As mentioned at the end of II of this chapter, the sociology of knowledge relates knowledge to different social contexts. We need to note that as societies always have a historical nature, knowledge also follows a historical process of development and accumulation. It starts from small quantity and develops to great quantity; it starts from a low level and develops to a high level. Peter Munz states that "Everybody agrees that knowledge has grown and that it was not just there, one fine day. Knowledge is therefore a historical phenomenon, something that happens and changes as time passes" (Munz 20).

---

[1] Quoted from *Zhuang-zi-ji-shi* 莊子集釋 Ed. Guo Qingfan. 11.

The Christian idea of human beings coming to this world is related with knowledge. Adam and Eve were chased from Paradise because, tempted by Satan, they yearned for God' s knowledge. Interestingly, the quest for knowledge begins on a somber note, only to triumph in those high points of human development throughout the centuries.

When human beings first came to this world, their knowledge was quite limited. They only knew things and phenomena directly related to their life. They knew what they could eat, where they could find food. They did not even know the use of fire. By and by, they learned how to make simple tools and how to make use of fire. First they could only make tools of wood, then stone, then bronze, then iron. First they only made use of caves or other natural shelters as their homes, later on they learned how to build their homes with grass, wood and clay.

The needs of life and curiosity pushed human beings to observe the world around them. They learned that there were seasons and the seasonal floods and droughts. They turned their eyes to the space above their head and asked themselves about the universe. Some Chinese scholar compared the sun to a torch, but Ko Hung (Ge Hong 葛洪 c.281 341) questioned that "a torch carried away grows smaller and smaller; the sun and the moon, however, do not alter their size during their whole course" (qtd. in Forke 17). This scholar had some knowledge of the sun, but his knowledge was limited by his social context and scientific level, thus, to us, his knowledge of the sun is not correct. Today our knowledge of the sun has become much more exact. Talking about "the perception of the sun," Montague says that "the entire act of seeing the sun reveals nothing of the conditions of its occurrence; but we know that the sun is approximately ninety million miles distant, and that it gives off from its superheated surface a complex system of electro-magnetic waves which travel through space to our eyes in about eight minutes" (Montague 183). In Ko Hung's mind:

> heaven is like a hen's egg and earth like the yellow in the egg, suspended lonely in the midst of heaven. Heaven is great, and earth is small, heaven is outside and water inside. Both heaven and earth rest on the air and move, carried by the water....One celestial hemisphere covers the earth, the other spreads around it underneath. Consequently only half of the twenty-eight solar mansions are visible, the other half are invisible. Heaven turns round like the nave of a wheel.
>
> (qtd. in Forke 21)

The early Greek astronomers had thought that the universe consisted of "an elaborate set of concentric transparent spheres, each turning after its own complex fashion and carrying the planets and other heavenly bodies around the Earth." Some even suggested that "all these turnings produced a kind of celestial music of 'Musick of the Spheres,' which earthbound mortals could not hear" (see Isaac Asimov, 150-1). Before the discovery of the solar system, there was the idea of Ptolemaic universe in which the earth was taken as the stationary center round which sun and stars revolved. Today we all know that these old ideas about the sun and the universe are not correct, but these examples tell us that the knowledge of human' s understanding of the world is developing and is limited by the historical situation.

In ancient times, there were no such instruments as telescopes and microscopes for people to observe exactly, and they had to guess and reason according to what they could see with their eyes, so their knowledge is not as developed as today. Even today' s knowledge is not absolute truth. For example, the law of universal gravitation discovered by Newton has been largely discredited by Einstein with his theory of relativity.

V. The scope of knowledge

Evidently, knowledge as a whole has a very vast scope. In the words of Emerson, "Our knowledge is the amassed thought and experience of innumerable minds" (*Letters and Social Aims: Quotation and Originality*. [qtd. in Stevenson 1054]). Human beings, because of their large population, are involved in various fields. There are farmers, workers, soldiers, technicians, managers, teachers, scholars, scientists, philosophers, administrators, secretaries, politicians, so on and so forth. Each group of the professionals is gaining and accumulating knowledge related to its specific profession or trade. The division of labor has greatly increased the output of society and improved human knowledge. In general, people can concentrate on their own profession, gain more related knowledge and do their work better and knowledge gained by all professional groups together forms a treasure of resources which is most important for the betterment of the human race.

As an example, the *New Encyclopaedia Britannica* displays the scope of human knowledge. Writing in its pages, Mortimer J. Adler[1] observes that "an encyclopaedia should not be merely a ' store house of facts,' but should also be ' a systematic survey [we underline] of all departments of knowledge" (see vol. 5. of Propaedia Outline of Knowledge [Guide to the Britannica]). Accordingly the first part of the encyclopedia (1-12 volumes) is "Micropaedia (Ready Reference)", the second part (13-29 volumes) is "Macropaedia (Knowledge in Depth)." In the first part, the entries are names of people, places, books, companies, organizations, animals, minerals, etc. In the second part, which is titled as "Knowledge in Depth", we can find, besides some names of important people and places, such terms as: accounting, animals, the art of architecture, arithmetic, literatures of Australia and New Zealand, banks and banking, the biological sciences, birds, computers, the cosmos, decorative arts and furnishings, diplomacy, dress and adornment, economic growth and planning, history of education, the theory of evolution, fishes, fungi, galaxies, geometry, textile industries, insects, language, Muhammad and the religion of Islam, medicine, money, museums, the art of music, number theory, nutrition, the art of painting, plants, radiation, relativity, rhetoric, classical scholarship, the art of sculpture, social structure and change, Taoism, telescopes, theology, time, tools, the technology of war, the theory and conduct of war, etc.

Even though the above list does not exhaust human knowledge, it gives us, in contemporary terms a general idea of what broad knowledge human beings have acquired. In addition, this encyclopaedia puts the knowledge of mankind into twenty-four categories: I. Anthropology and Ethnology; II. Archaeology and Antiquities; III. Art; IV. Astronomy; V. Biology; VI. Chemistry; VII. Economics and Social Science; VIII.

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[1] Adler is the author of the article "The Circle of Learning" which is an attachment in the encyclopedia, and he is quite well-known for other thought-provoking books.

Education; IX. Engineering; X. Geography; XI. Geology; XII. History: XIII. Industries, Manufactures and Occupations; XIV. Language and Writing; XV. Law and Political Science; XVI. Literature; XVII. Mathematics, XVIII. Medical Science; XIX. Military and Naval; XX. Philosophy and Psychology; XXI. Physics; XXII. Religion and Theology; XXIII. Sports and Pastimes; XXIV Miscellaneous. Each category can be put into some sub-category and so on and so forth (see vol. 5. of Propaedia Outline of Knowledge [Guide to the Britannica]). Thus we have a rough idea about the scope of knowledge and its categeries.

VI. A glimpse at the history of knowledge in China and Europe

To discuss knowledge, we need to have some understanding of the history of knowledge; also, knowledge in both Li' s and Swift' s works cannot be fully appreciated without a brief incursion into the history of knowledge in China and Europe. This is because each author was located in his own historical and cultural social context that placed specific constraints on how the novel is to aesthetically handle accumulated knowledge.

In China, civilization came quite early, and along with it came the development of knowledge. About six or seven thousand years ago, human inhabitants in China could already make stone tools as stone axes, stone knives, stone spades, mortars. They knew how to polish and make holes in their stone tools. Besides, they also knew how to make tools out of bones. From observation of the wild plants they learned the rhythm of the growth of these plants and began primitive agriculture. The use of arrows increased their ability to catch preys. They fed some of the animals they caught for future consumption and developed livestock husbandry. Some written signs and symbols of meaning appeared on their earthenware, which was the beginning of the written language.[1] Each clan had its own title and totem, as well as its primeval religion and holidays.

About four thousand years ago, China entered the slave society which was a higher stage than the clan society. There appeared a systematic government with officials at different levels. People had a better knowledge of climate and astronomy; some primary calendar appeared. More inscriptions appearing on bones or tortoise shells signaled a higher stage of written Chinese than those signs found on earthenware and the ability to express more complicated meaning. At this time, the crafts of producing bronze ware were highly developed. For instance, a huge bronze quadripod weighting 875 kilograms with delicate design and fine patterns was found by archaeologists. At this time an improved calendar appeared. In the Zhou dynasty (c.1028— 257 B. C.), agriculture and handicraft developed further. Iron tools began to be used in small scales. At the end of the Zhou dynasty was the Spring and Autumn Period (770— 476 B. C.). Now the king was only a nominal supreme ruler and tens of states were run by their own rulers independently and the annexing wars were endless. It was at this time that a hundred schools of thought were flourishing. Among those scholars, Confucius (551—479 B. C.) was the most important. About this Chinese philosopher, the historian Eberhard remarks: "Confucius' s importance lies in the fact that he systematized a body of ideas [we underline], not of his own creation, and communicated it to a circle of disciples. His teachings were later set down in writing and formed, right down to the twentieth century, the moral code of the upper classes of China" (41).[1] Another important philosopher of the time is Lao Zi whose dates of birth and death are unknown. Lao Zi is taken as the creator of Taoism which also has a long lasting influence in China.

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[1] About Chinese language, see Needham Vol.1.27-41.

The following period was the Warring States (475—221 B. C.) when seven stronger states competed to win over the whole China. At this time, iron tools and weapons were widely used and productivity was much improved. Because of the endless wars, military strategy and tactics were greatly developed. *Sun Bin's Art of War* 孫臏兵法 is known as the greatest summary of the art of war of the time. Literature also developed. Qu Yuan 屈原 (340—278 B. C.), the great patriotic poet of the Chu state, wrote a long poem named *Li Sao* 離騷 which was highly appreciated by readers. When Shih Huang-ti of the Qin dynasty finally unified China in 221 B. C., he ordered that Chinese characters be unified. This measure has a very important role in keeping China together for over two thousand years. In the Han dynasty (206 B. C.— 220 A. D.), better agricultural knowledge further increased the output from the fields. People learned to improve the irrigation system and the farming method. Steel weapons were widely used. Textile industry developed fast and jacquard weaving technique was employed. The opening of the Silk Road broadened the view of the Chinese living in the Central China. They obtained much more knowledge about the geography, customs, culture and history of the nations living in central Asia. Since the Han dynasty, Confucianism has been taken as the supreme school of thought in China. The Chinese found the way to make paper for the first time in the world in 105 A. D. It is Cai Lun 蔡 倫 (? — 121) who organized the experiments to invent paper.[1] After six hundred and fifty years, the method of producing paper was introduced to central Asia, and another four hundred years later it was introduced to Europe. The invention of paper greatly contributed to the spread of knowledge. A famous scientist Zhang Heng 張 衡 (78— 139) in the Han dynasty constructed an armillary sphere based on his astronomical observation and his knowledge of mechanism. In the period of the Three Kingdoms (220—280), medical science reached a higher peak. The famous physician and surgeon Hua Tuo 華 佗 (? — 208) could perform various surgical operations which had been hardly imaginable before.[2] In this period of time, mathematics reached a higher stage. A mathematician named Zu Chongzhi 祖 衝 之 (429—500) worked out the most exact ratio of the circumference of a circle to its diameter at the time. He concluded that the ratio is between 3.1415926 and 3.1415929203. Needham comments that it "was not equalled anywhere until the end of the 16th century."(Vol. 3. 101) Only after one thousand years could mathematicians in others countries reach such an exactness in the study of the ratio of the circumference of a circle to its diameter. The Tang dynasty (618— 907) was one the most prosperous dynasties in China. People in the Tang dynasty made further development in economics, science and arts. The government ran in large scale the handicraft workshops concerning

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[1] Eberhard here is emphasizing that the upper classes of China have been taught to observe the Confucian moral code as they are taken as the most important part of the Chinese society. If they could do this, the

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society would keep its stability. Actually many individuals from the upper classes have not strictly observe the Confucian moral code.

[1] See Needham Vol.53.

[2] See Needham Vol. 1.204.

textile, ship-making, mines and metallurgy, etc. The famous earthenware called Tang-san-cai (tri-colored glazed pottery of the Tang dynasty) reached a very high level of handicraft and has been loved by people since then. Medical science continued to progress. Sun Simiao 孫思邈 (581—682) compiled two monumental works on medicine *Qian-jin-fang* 千金方 and *Qian-jin-yi-fang* 千金翼方, which enriched the Chinese medical knowledge. In the Tang dynasty, the communication between the Chinese and foreign countries increased greatly. Foreign merchants and students were commonly seen in the capital city Chang An (today' s Xi' an) of the Tang dynasty. This communication enriched the knowledge of the Chinese about foreign geography, economy culture, arts, and music. The Song dynasty (960—1279) was another prosperous dynasty. Besides developments in the field of economy, paper money came into being for the first time in the world.[1] In the Song dynasty, movable type case in the printing industry was first employed. Bi Sheng 畢升 (? —c.1051) carved each single Chinese character on a small piece of a certain kind of fine clay and burned these characters hard. When printing, he chose the characters according to the articles he was going to print and put them in a case and fixed them with a kind of glue. After he applied ink on the surface of the case he could print the characters on the paper. After printing, he could take apart the case and use the clay-made characters again. This technology, like the invention of paper, also contributed much to the propagation of knowledge. The compass and gunpowder were also invented in the Song dynasty.

Arts prospered. *Ci* 詞, a special form of poetry written to certain tunes with strict tonal patterns and rhyme schemes and fixed numbers of lines and words, got full development in this period of time and a lot of masterpieces were produced and long enjoyed by the Chinese. Vernacular writings called Ping-hua 平話 (meaning long stories at the time) and Xiao-shuo 小說 (meaning short stories at the time) were developed on the base of oral performance. In the Yuan dynasty (1271—1368), the Han Chinese was ruled by the Mongolians. In this dynasty, *Qu* 曲 became very popular. *Qu* has two forms. One is called *San-qu* 散曲, which refers to a type of verse for singing; the other is called *Za-ju* 雜劇, which is a kind of drama. Among the playwrights, Guan Hanqing 關漢卿 (dates unknown, died after 1279) is the most famous who wrote over sixty plays, some of which are still performed even at present time.

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[1] See Needham Vol.1.139.

In the Ming dynasty (1368— 1644), city planning and architecture reached a high level. The emperor Cheng Zu shifted the capital from Nanjing to Beijing and launched large scale constructions. The complex of royal palaces was well designed and employed huge number of laborers in realizing the design. The whole city was designed in a symmetric way with the royal palaces in the center. The magnificence of the buildings in Beijing could hardly be matched by buildings in other cities in China. In the Ming dynasty, the emperor Yong Le sent a fleet led by one of his eunuchs, Zheng He 鄭和 (1371 or 1375—1433 or 1435) to the south sea. Zheng He had seven voyages in the south sea in twenty nine years and visited over thirty countries in Asia and Africa.[1] In his voyages, Zheng He employed many seamen who had a rich knowledge of navigation. Zheng's experiences also enriched the knowledge of the Chinese about the foreign countries in the south.

Novels written in the vernacular became the trademark in the literature of the time. Some of the most famous novels in Chinese literature such as *The Romance of the Three Kingdoms* 三國演義, *Water Margin* 水滸傳, *Pilgrimage to the West* 西游記 and *Golden Lotus* 金瓶梅 appeared in the Ming dynasty. In the Qing dynasty (1644—1911), the Han Chinese were under the rule of the Manchus. The territory of the Qing dynasty was larger than any dynasty in the history of China. To put the intelligentsia of the Han nationality under its control, the government applied two methods. On the one hand, it put to death many Han intellectuals who were against the government; on the other hand, it enrolled many of them into the officialdom through the imperial examination system. Though in the early and the middle stages of the dynasty the economy had been much improved, the Qing government met with so many difficulties and rebels that it had no power to deal with the expansion of the European countries at the time and applied a close-door policy (the communication between Western countries and China was frequent only for a short period before the emperor Shizong [reign 1723-1734]) to shield itself from foreign influence. As a consequence, it ignored the development in industry and science in the European countries and made China fall far behind the West in many fields. In nearly four hundred years of the reign of the Qing Dynasty, there appeared several best known novels such as *A Dream of Red Mansions* 紅樓夢 which has been so far regarded as the peak of novel writing. An encyclopedia *Si-ku-quan-shu* 四庫全書 of over thirty-six thousand volumes, the largest of its kind in the contemporary world, was compiled in the Qing dynasty. The author of the Chinese novel *Flowers in the Mirror* 鏡花緣， Li Ruzhen, was living in the social context of the Qing dynasty. He was a good learner. Through reading and observation, he studied all the knowledge that was available to him. He paid attention to some Western knowledge introduced to China in the short period of open-door time. He also studied traditional knowledge accumulated in the historical progress in China. He chose to make use of his knowledge in various fields in his novel which is selected as the Chinese sample of this study. The categories of knowledge employed by him and the functions meant to be fulfilled by knowledge in this novel will be elaborated in Chapter Two.

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[1] See Needham Vol.1. 143.

In Europe, the Greeks invented symbols for vowels in the middle of the eighth century B. C. (Doren 25) and they achieved a grand civilization. In Greek literature, Homer, the great poet, was outstanding with his *Iliad* and *Odyssey* which contain much knowledge of geography, culture, etc. available at the time along with the plots and characters. In the sixth century B. C., a "knowledge explosion" (Doren 29) happened in Greece. It began with the importation of papyrus from Egypt. With this new communication device, written materials were distributed throughout the Greek world and greatly promoted the spreading of knowledge and communication between nations of different cultures. Science developed. Thales, it was said (Doren 31), predicted an eclipse of the sun in the year 585. He might be the first person to foresee this phenomenon. Such learned people as Socrates, Plato, and Aristotle exerted great influence on the way of human thoughts. In the field of art, the tragedies written by Aeschylus (c. 525—456 B. C.), Sophocles (c. 496—406 B. C.), and Euripedes (480—406 B. C.) reached very high level and were greatly appreciated. The Greeks already had good knowledge in husbandry, viticulture, pottery making, commerce, finance, metals, weapon making and warfare. The Romans inherited the Greek civilization and adapted it. They were very practical people. They enforced the law of Twelve Tables in about 450 B. C.; they built a vast and complicated road system, and they learned how to govern the peoples they had conquered. Even though the Roman writers borrowed much from Greek literature, Roman literature has its own originality (Mack 628). The Romans promoted education throughout the whole empire. Doren states: "By the second century AD every Roman, provided he was not a woman or a slave, from Britain to Persia, could obtain an education practically as good as any other provided for Romans "(84).

During the period that followed the collapse of the Roman Empire, Europe entered a period of decline. From 476 to 1453, during the period known as the Middle Ages, endless warfare caused people to lead a miserable life. "Arts, philosophy, and discussion simply ceased to occur" (Doren 89). The pursuit of scientific knowledge was much hindered. People, in their despair, looked for spiritual release, and Christianity gained great advance (Chritianity was established much earlier, but the depair in the people caused by the desperate confusion of the world helped to turn more people to the religion). The emperor Constantine made Christianity the official religion of the Roman Empire and gave it much support including rich gifts, wide privileges and immunities from taxation. In the Middle Ages, intellectuals were more involved in theology. "For centuries the most intelligent, imaginative, and hardworking minds of western Christendom struggled with these questions and scores of others like them" to get better interpretation of the sacred books (Doren 101—2). However, during this period of time, there happened some renaissances, especially in the twelfth century. Schools and universities were founded with the study of religious scripts and this was of great meaning for the development of human knowledge. Architecture become highly developed with the brilliant Gothic buildings as typical landmarks. Along with the formation of national countries, vernacular literature began to thrive. In Britain, there was *Beowulf*, in France, there was *Chanson de Roland*, in Spain there was *Poema del Cid*, and in Germany, there was *Nibelungenlied*. Also, fables such as the *Roman de Renart* and the *Roman de la Rose* became very popular and marked the peak of this genre of the time. With his masterpiece *The Divine Comedy*, Dante Alighieri was regarded as "the culminating figure of the Middle Ages" (qtd. in Magnus 39). Starting in Italy in the late 14th century, a movement that marked the beginning of the modern world (Drabble 829) gained the impetus. This was the Renaissance. The Renaissance caused human beings to be more interested in this life rather than in the next life as they had been in the Middle Ages and knowledge in every field of human society was revived and gained great momentum. Many great writers appeared. Boccaccio (1313— 75)'s *Decameron*, Chaucer (c. 1340— 1400)'s *The Canterbury Tales*, Rabelais (c.1490— 1553)'s *Gargantua and Pantagruel*, Cervantes (1547— 1616)'s *Don Quixote*, and Shakespeare (1564—1616)'s *Hamlet*, to name a few of the masterpieces produced in this time, entered the treasure of literature. Gutenberg (c.1400— 68) was the first person to print the Bible from movable metal type around 1450. This invention made mass production of cheaper books possible and largely helped the promotion of knowledge. Marco Polo (c.1254—1324)'s narrative about China shocked Europe and much enriched the knowledge of the Europeans about China. Voyages of discovery beginning in the fifteenth century played an important role in the history of knowledge. The husbandmen in northern Europe had a great demand of spices to preserve the meat for winter and they could only purchase them from the Arab traders with gold which was "pitifully scarce" in Europe (Doren 172). It was rumored that there was much gold south of the Sahara. Thus started the voyages of the Europeans toward the south. The Portuguese explored the Gold Coast of Africa around 1470. Bartolomeu Dias (c. 1450—1500) passed the Cape of Good Hope in 1488. Christopher Columbus (1451—1506) discovered America in 1492 by mistake for he meant to go to India by a westward route. This discovery almost doubled the area of the known land on the earth and brought human beings much closer to the full awareness of the whole world. Since the sixteenth century, scientific development had accelerated. Copernicus published *On the Revolutions of the Heavenly Orbs* in 1543 and suggested that the earth rotated once a day and revolved around the sun once a year. His idea about the universe changed the old idea of human beings about the universe. Kepler (1571— 1630) and Galileo (1564 — 1642)also contributed to modern astronomy.

In th eighteenth century, the movement known as the Enlightenment brought "The Age of Reason"(Mack 1889)[1] to Europe. Isaac Newton (1642—1727)' s demonstrations of the order of natural law greatly encouraged the concept of an entirely rational physical and moral universe (Mack 1890). With the advance of scientific knowledge, craftsmen understood more about the mechanism of machines and the Industrial Revolution occurred. Mass production changed the life of human beings to a great extent for machines took over a large part of work which could only be done by manual labor in the earlier time and increased the productivity of labor to a much higher level than before the Industrial Revolution. People started to challenge the supreme power of monarch. Utopian ideas appeared. This became the trumpet for the American Revolution and French Revolution. The author of *Gulliver's Travels*, Jonathan Swift, was living in this historical stage in England and Ireland. He was in the same rank of those people represented by Francis Bacon, that is, the people who had strong interest in knowledge. He had good knowledge of politics and history as well as classical and Renaissance literature. He also raised the idea of a country ruled not by a monarch in Houyhnhnmsland. He had insight in modern science of physics, astronomy and geography which had gained great progress at his time. He was basically a satirist and employed his knowledge in various fields in his *Gulliver's Travels* to strengthen this masterpiece of satire. The knowledge used by Swift in *Gulliver's Travels* and the functions played by knowledge in this work will be discussed into detail in Chapter Three.

Knowledge is a vast sea. Any single person, no matter how hard he studies, can only suck up a small part of it. Yet, through skillful handling, even the smallest parcel of knowledge can be made to appear complex. If a writer wants to achieve certain effects in his literary work by using knowlege, he needs to use knowledge in certain forms, because a literary work is not a textbook, and knowledge needs certain forms to fit into the literary work. For example, in *Flowers in the Mirror*, knowledge of language is expressed through the pursuit made by the characters (Tang Ao and Duo Jiugong the old seaman) for the phonetic scheme, and the handling in the speech of the talented ladies when consuming wine. Knowledge of games is introduced in the banquet scene held when the one hundred ladies were celebrating their success in passing the imperial examination. In *Gulliver's Travels*, knowledge of politics and history is expressed in conversations between Gulliver and the king of Brobdingnag, and also through Gulliver' s experience in Lilliput and other lands. Knowledge of language is expressed by means of local languages created by the author, and also through Gulliver' s attempts at learning a new language when he visited a new land. Knowledge of physics is expressed in the form of explanation of the mechanism of the flying island.

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[1] This term is used to refer to the flourish of "the philosophic,scientific, and rational spirit, the freedom from superstition, the scepticism and faith in religious tolerance of much of 18th-cent. Europe" (Drabble 324).

In the following two chapters we shall discuss the forms of knowledge used by Li Ruzhen in *Flowers in the Mirror* and Swift in *Gulliver's Travels* as well as a simple introduction to each author and his work. At the end of each categery of knowledge concerned, we shall discuss the function of the variou types of knowledge exhibited in each work. These functions will be summed up in Chapter Four.

Chapter Two: Li Ruzhen and *Flowers in the Mirror*

Li's life

The years of birth and death of Li Ruzhen 李汝珍, the author of *Flowers in the Mirror* 鏡花緣, are not exactly known. According to the studies made by some Chinese scholars (see the "Preface" to *Flowers in the Mirror* [Li Ruzhen 1-10]), Li was born after 1763 (not long after Swift's death in 1745) and died before 1830. He was born in Daxing county near Beijing in northern China. According to Zhu Meishu, his family was such a one: 家無恒產，是個普通城市居民家庭 [His family did not have perpetual assets, and is a common family of urban inhabitants (137)]. His elder brother Li Ruhuang moved to Hai-chou in northern Kiangsu province in southern China to assume a minor position in the government. Li Ruzhen himself lived in Daxing, his hometown, until he found that he had better move to where his elder brother was. In Kao Hsin-sheng's biographical study of him *Li Ju*-chen(*Li Ruzhen*), we read something about Li's early life: "Unable to support himself, Li Ju-chen moved in 1782, around the age of nineteen, to Hai-chou in present-day Hai-tung county in northern Kiangsu province where he lived with his elder brother, Li Ju-huang (Li Ruhuang), who served as the salt receiver of Pan-p'u (part of Hai-chou county) from 1783 to 1799" (20).

In 1801, Li became a minor official in the government for some time, serving in Henan Province. During his term of service, the Yellow River flooded. He observed how the people fought the flood and how the river was brought under control. Later he exploited his observations and ideas of controlling floods in *Flowers in the Mirror*.

In ancient China, to enter officialdom by way of the imperial examinations was considered as the most admirable and glorious way of achieving success by almost all intellectuals. Yet Li was not successful in this. Kao points out that "embittered by his own setbacks in the civil service examinations and his insignificant official career, Li Ju-chen did not believe that the meaning of man' s existence was nearly so simple and transparent as implied by the regulated paths rigidly laid out for him by the Manchu government" (25). Seeking to achieve something beyond the official career and "decided instead to dedicate the rest of his life to research and writing" (Kao 25), he turned his attention to find the true meaning of his life.

Li was assiduous in his studies and like Francis Bacon, he tried to take all knowledge to be his province. Mary Coleridge' s view of a "strong" man ("The fruits of the tree of knowledge are various; he must be strong indeed who can digest all of them" [*Gathered Leaves*, 8, qtd. in Stevenson 1054]) aptly describes Li' s incessant pursuit of knowledge. Clearly, he had become, in Kao' s words, "a genuine literary man—that is, a man for whom the complex dimensions of knowledge or tradition itself become a matter of the highest concern, enjoyment, and sometimes disappointment" (Kao 29-30).

Li did not limit his readings to the field of contemporary academic studies, a necessity to pass the imperial examinations to obtain necessary qualifications to become an official. His interests were varied. His friend Shih Wen-k' uei spoke of him in these words: "His whole life has been devoted to the pursuit of the art of calligraphy, the study of seals and history, while in addition, familiarizing himself with astrology, divination, chess, and other games. there is nothing that does not strike his interest" (qtd. in Kao 20). To sum up his knowledge in *weiqi* (a game played with black and white pieces on a board of 361 crosses, still popular in China, Japan, Korea and other countries), he wrote *Shou-zi-pu*受子譜.

Besides detailed knowledge of many arts and skills, Li was also a qualified phonologist. He was much influenced by the School of Han Learning which flourished at his time. The Manchus built up their dynasty in 1644, conquering the Hans with iron and blood. In the early and middle years of this dynasty, to maintain their rule, the emperors Kang-xi (1662-1723), Yong-zheng (1723-1736), Qian-long (1736-1796), and Jia-qing

(1796-1821) "launched the literary censorship movement, sometimes called 'the Death of the School of Mind.' Many noted scholars...were either executed or suffered grievously at the hands of their new rulers" (Kao 17). But by and by, the Manchu rulers realized that if they allowed the Han scholars to do studies that did not go against their rule, their empire might enjoy a better prosperity. Then the censorship movement relaxed and the School of Han Learning flourished. The main trend of the School of Han Learning was the critical interpetation of ancient texts, and included in this school was the study of phonology. When Li Ruzhen was living in Pan-p' u, he had the chance to study from a renowned philologist Lin T' ing-kan (Lin Tingkan 1757-1809). He also became interested in research by other well-known phoneticians (see Kao 20). Li' s experiences in both northern China and southern China supplied him with a good foundation to make a comparative study of the northern dialects and the southern dialects in China. *Li-shi-yin-jian- Li's System of Phonetics* 李氏音鑒 is his academic work in this field. A prominent Chinese scholar Hu Shi 胡適 (1891-1962) praised Li' s study of phonology as 有他的獨到之處 [has its unique characteristics (for more, see the related section in this chapter)].

I think it is the varied interests and assiduous pursuit of knowledge that makes Li able to present in his *Flowers in the Mirror* many exotic peoples and scenes in nearly thirty countries outside of China, and to describe in the later part of the book so many arts and skills in the scenes of the ladies taking part in the celebration parties. These skills and arts include: calligraphy, painting, Chinese zither, *weiqi*, medicine, divination, astrology, phonology, mathematics, lantern riddles, drinkers' wager game, archery, shuttlecock, pitching arrows into a pot (ancient game, the loser had to drink a forfeit), etc. *Flowers in the Mirror* is considered by scholars as one of the four novels showing off the author's knowledge in the Qing dynasty.

Though some high profile scholars such as Hu Shi and Lu Xun believe that *Flowers in the Mirror* was written in Li' s late years, [1] Wang Qiongling, based on more reliable resources, believes Li started to write this novel when he was in his prime and spent about thirty years on writing it (see Wang Qiongling 374). That is to say, since his prime, Li no longer stuck to the hope of passing the imperial examination to enter officialdom and decided to write a novel in which he would put in the knowledge he had accumulated in his study and life. When it was done, the book is so multiple and all-inclusive that different readers may see different things in it. [1] Li might have hoped to gain some material rewards by creating an outstanding novel. Kao points out that Li "realized that through his own endeavors it might be possible to achieve some scholarly recognition, which in turn would bring him some material rewards...Possible though it might have been, it was not to be; Li Ju-chen (Li Ruzhen) died without ever having tasted prosperity" (19). Li' s late years were spent in poverty. His friend Sun Jichang described him in a poem in these words: "His health is declining. He does not have any cultivated land to support him, and has to suffer hunger in his old age. It is sad that for decades, only brushes and inkstones accompanied him.... He keeps on writing though he is so poor and worried, and his ambition is worth our sympathy and praise" (qtd. in Zhu Meishu 138).

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[1] Hu Shi thinks Li did the writing of *Flowers in the Mirror* from 1810 to 1825 (see Wang Qiongling 367. Lun Xun mentions in his *A Brief History of Chinese Fiction*: 晚年窮愁，則作小說以自遣([Li] in his late years were in poverty so he killed the time by writing this novel [see Wang Qiongling 373]).

Some scholars agree that Li Ruzhen revealed his purpose in writing *Flowers in the Mirror* in Chapter 23 through the mouthpiece of Lin Zhiyang, the merchant.[1] In the Shushi Country 淑士國(Country of Well-behaved Men)， Lin told the local inhabitants in a humorous way that besides the classical work *Laozi* 老子, there is a *Shaozi* 少子. Actually there has no such work in China. Lin was referring to *Flowers in the Mirror*. Everybody knew that *Laozi* is a well-known Chinese classic written by Li Dan 李聃 styled as Lao Zi living in the fourth century (see Eberhard 45). Pointing to the fact that Li Ruzhen shared family name with Li Dan, Lin said that the author was a descendent of Lao Zi, and if Lao Zi' s work was *Laozi*, Li Ruzhen (as he was much younger than Li Dan [i.e.Lao Zi]' s work (*Flowers in the Mirror*) could be taken as *Shaozi* (the Chinese character *Lao* 老 means old and *Shao*少 means young. By saying Li was Shaozi (a young person) Lin was referring to the fact that Li Ruzhen was living in a time much later than Li Dan' s). The local inhabitants said they never heard such a book and Lin told them that "這'少子'雖以游戲爲事，却暗寓勸善之意，不外'風人'之旨 [Even though this *Shaozi* is full of games, the implied purpose of it is to persuade people to be kind and follow good practices. (Li Ruzhen 163 my translation)]"

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[1] Hu Shi thinks its theme is the liberation of women. Lu Xun thinks the author made use of the form of novel to display his knowledge, some other critics even think the author was making use of this novel to promote nationalism and go against the Manchus (see Wang Qiongling 384).

Introduction of *Flowers in the Mirror*

Flowers in the Mirror, a typical Chinese classical novel of one hundred chapters (most Chinese classical novels have chapters in tens, particularly one hundred), begins with a story with its background drawn from Chinese mythology. The first event in the novel happens in the heavens. In Chinese mythology, just as in Greek and Roman mythology, there are a many gods and goddesses. The supreme god in the Heavens is the Jade Emperor 玉帝. In *Flowers in the Mirror*, Li Ruzhen made use of the major gods in the traditional Chinese mythology as the Jade Emperor, the Western Queen Mother 王母娘娘, Chang' e 嫦娥(the Lady of the Moon), etc. who are well known to the Chinese readers. The heroine in Li' s novel, the Fairy of a Hundred Flowers (supervisor of all flowers), sometimes appears in some mythological stories but only as a minor goddess, but in *Flowers in the Mirror*, Li made the Fairy of a Hundred Flowers one of the main characters and spent much ink on her so that he could develop his plot. Once upon a time, at the big party for the birthday of the Western Queen Mother, this fairy has a quarrel with Chang' e, for she will not satisfy Chang' e' s request that she should order all the flowers to bloom in a single day to add to the happy atmosphere of the party. At the time the Heart-Moon Fox is to be sent from the heaven to the world of mortals to become the only empress in China' s history—Wu Zetian. The Lady of the Moon, nursing her resentment, asks the Heart-Moon Fox, with whom she is in good relations, to order all flowers to bloom in a single day when she becomes the empress. One day, The Fairy of a Hundred Flowers, having completed her daily duties, goes to visit her friend Magu, another goddess, and gets involved in a long lasting *weiqi* game. It happens that just on this winter day, Wu Zetian, the only empress in China, in high spirits after putting down a large scale rebellion, is drinking wine and orders that all flowers should bloom in a single

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[1] See Wang Qiongling 386.

day; those who disobey would be burned to ashes. The fairies of flowers (there is one fairy for each kind of flower) fall into confusion because they can not find their supervisor— the Fairy of a Hundred Flowers who has been trapped in the *Weiqi* game with Magu. Afraid of being set afire, all the flowers blossom in a single day following the empress' s decreed. When the Fairy of a Hundred Flowers returns, it is too late to do anything. For the delinquency committed by the Fairy of a Hundred Flowers (she has not asked for Jade Emperor' s permission) and loose conduct committed by all the flowers, the one hundred flower fairies are condemned to earth as punishment (after their experiences on the earth, they will return to the Heaven).

The Fairy of a Hundred Flowers was born into the Tang' s family in south China, and given the name Tang Xiaoshan ("xiaoshan" means small hill). Her father Tang Ao is an intellectual who has hoped to become an official by passing the imperial examinations. His name appears third on the list of successful candidates, but his qualification is canceled by the empress because he has been sworn brother of the leader of the rebellion put down by the empress a few months ago, though actually he has not been involved in the rebellion at all.[1] Desperately disappointed, Tang Ao decides to change his ideas by travelling abroad with Lin Zhiyang, a merchant and the husband of his wife' s sister. They travel over thirty countries and see a lot of exotic peoples, scenes and customs. On their way back, they reach an island. There Tang Ao parts company and disappears into the mountains. He has decided to get away from the secular world in order to become an "immortal", something he has long hoped.

When his daughter Tang Xiaoshan, the incarnation of the Fairy of a Hundred Flowers, learns that her father would not go back home, she asks Lin, her uncle, to accompany her to look for her father. She travels along the route which her father has taken. Finally they reach the island where her father disappeared and meet a woodcutter who passes on a letter her father has written. In it, he asks her to change her name to

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[1] In ancient China, officials often asked or permitted their descendants to become sworn brothers or sisters with the descendants of their friends so that in future these could help each other in their career, but when one of them offended the supreme ruler or the high rank officials in power, the others might be influenced if their relations were known by others.

"Tang Guichen" and to take part in the imperial examination and win the title of "Talented Lady". Only then will he meet her.

Before China entered the modern age, the governments only gave imperial examinations for men to gain qualifications to become officials. Wu Zetian was the only empress in the history of China and she changed the name of Tang dynasty to Zhou.[1] Li Ruzhen made use of this historical event for the background of his novel, and created this episode of imperial examination for women. By using this particular historical background, Li had the attempt of achieving verisimilitude.[2] For this is the best historical background for Li to set in such a unique event—the imperial examination for women. If Li decided to have such a imperial examination for women in his novel, this selection of historical background makes it most plausible for his reader to accept it. Foreseeing that the former emperor might be restored to the throne and to avoid the condemnation of forgetting the former emperor once the former emperor is restored, Tang Ao asks his daughter Tang Xiaoshan to change her name into Tang Guichen, which means Tang's (Tang is the name of the Tang dynasty and Wu Zetian changed the name into Zhou) subject in boudoir.

Tang Guichen and ninety-nine other girls (together one hundred girls as the incarnations of the fairies of one hundred flowers)successfully pass the imperial examinations and all obtain the title of "Talented Lady." They celebrate their success in the big garden of Bian Bin, the principal imperial examiner. At the big party, the talented ladies present their diversified and colorful arts and skills.

Tang Guichen goes again to look for her father and never returns. The second generation of the leaders of the last rebel (some of the one hundred girls are in this rank and some later on marry the sons of those rebel leaders) rise up again and succeed in restoring the former emperor to the throne. As Wu Zetian is his mother, the emperor still regards her as empress dowager. She decrees to hold another imperial examinations for women and orders that all the ladies who have passed the last examination should return to attend the celebration party. Thus ends the book.

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[1] This "Zhou" carried the same name with but was not the Zhou dynasty (c.1028-257 B.C) in much earlier history of China. As it lasted only for 11 years, and Wu Zetian had very close relation with the Tang royal family, many books of history do not mention it. Yet we can find it in *A History of China* by Wolfram Eberhard: "Soon after she (Wu Zetian-my note) dethroned him(the emperor and her second son-my note) too and made herself empress in the "Chou (Wade-Giles style of the romanization of Zhou-my note) dynasty" (690-701). This officially ended the T'ang dynasty" (18). But in the year of 701, she was forced to hand over power and the Tang dynasty was restored.

[2] The plausibility of a literary work. In this thesis, to achieve verisimilitude is taken as a function of knowledge in literature and will be further discussed in Swift's related part and in Chapter Four.

The over thirty countries visited by the characters in the novel and the array of a hundred ladies in the book provide Li with the necessary background to display his vast knowledge. This aspect of *Flowers in the Mirror* is underlined by Zhou Fenling who makes the claim that 人物......爲表現才學而造 [the novel' s character development gave the author free reign to display his knowledge (Zhou Fenling 107)]. Li treasured the knowledge which he spent decades of years of hard study to gain, so he was determined to exhibit his knowledge in his novel. He also hoped to display his knowledge in an artistic way so that the knowledge would be interwoven with the plot and characters in the novel and achieve readability. In the following sections, we will see how Li displayed his knowledge, in what fields his knowledge lies[1] and the functions related to certain knowledge.

The forms of knowledge in *Flowers in the Mirror*

I. Phonology

In the Qing dynasty, scholars paid much attention to the study of phonology which was basic to their scholarship and Li Ruzhen, as we mentioned before, put his achievements in the study of phonology in *Li-shi-in-jian-The System of Phonetics* 李氏音鑑, an academic book on phonology. In *Flowers in the Mirror*, Li' s specific interest in the question is echoed in several chapters of *Flowers in the Mirror*. In Chapter 31, one of the characters, Duo Jiugong, the old seaman (he had much experience in travelling and was much learned), explains to Lin, the merchant: "音韵一道，亦莫非學問 [Phonology is also a kind of scholarly knowledge (Li Ruzhen 223)]." Here the author is telling his reader not to look down upon phonology. In *Flowers in the Mirror*, Li tried to introduce his knowledge of phonology in the artistic form of a novel. He tried to work out interesting characters, dialogues, plots to save his purpose. The most important form of knowledge he wished to pass on concerned the phonetic scheme, the basis for the correct pronunciation of Chinese characters. He achieved this by showing phonology to be very valuable and very difficult to gain and thus calling the attention of his reader to this phonetic scheme. Also important, as we shall discuss bellow, is the method of *Fanqie* 反切 for pronouncing Chinese characters. In addition, several interesting games based on phonology were introduced to make the matter much more palatable.

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[1] As a complete English version of *Flowers in the Mirror* is not available, the translation in this thesis is mine unless otherwise stated.

The prominent Chinese scholar Hu Shi 胡適 has made some comments on Li's achievement in this field. Opposing some judgment in an entry of a Chinese Who's Who saying that Li actually did not really know phonology (see Hu Shi 2), Hu Shi claims that judgment is arbitrary and unfair. He says,

> 在我們這個時候，有種種音標可用，有語音學可參考，所以我們回看李汝珍最得意的這點發明，自然覺得很不稀奇了。但平心而論，他的音韵學却也有他的獨到之處。[Today we have various systems of sound symbols to be employed and phonological theories to be consulted, so we do not think Li's invention (which he was so proud of) is particularly valuable. In all fairness, Li's phonology has its unique characteristics." (Hu Shi "Introduction to *Flowers in the Mirror*鏡花緣的引論"" 14 my translation)]

Hu Shi finds three advantages to Li's phonology: (1) 注重實用 [laying stress on practicality], (2) 注重今音 [laying stress on present pronunciations], and (3) 敢于變古 [having the courage to change the old ideas] (Hu Shi, ibid, 14 [my translation]). The comments made by Hu Shi prove that Li was not just an amateur in this field.

Li's presentation of phonology begins with *Fanqie* 反切. Before phonetic symbols were invented in China, scholars had to use the method of *Fanqie* to mark the pronunciation of Chinese characters. Usually the pronunciation of a Chinese character is a combination of a consonant and a vowel (with or without the ending nasal). But this character can not be taken apart to show the consonant and the vowel separately. *Fanqie* works in such a way: two characters are employed to mark the pronunciation of one character with the first having the same consonant as the third character (whose pronunciation is wanted) and the second having the same vowel and tone with the third character. When the two characters are read quickly (in fact, the consonant of the first character and the vowel of the second character are pronounced), the pronunciation of the third character is obtained.

In Chapter 16, when Tang Ao and Duo Jiugong the old seaman arrive in Black-teeth Country they are shown to meet two girls who are quite erudite in scholarly pursuits. Li uses the girl in purple as his mouthpiece to explain the importance of phonology. She says: "婢子聞得讀書莫難于識字，識字莫難于辨音.若音不辨，則意不明。[I hear that the most difficult thing in study is to know the characters (*zi*, the Chinese characters); the most difficult thing in knowing the characters is to differentiate the pronunciations. If you don' t know the pronunciation, you don' t know the meaning. (Li Ruzhen 110; ch. 16)]" Stephen Roddy also notices the interest in phonology showed by the characters in the novel and comments thus: "The riddle of determining precisely how to analyze words according to their phonetic components of vowels and consonants seems to take on a particular urgency for Tang and his companions" (Roddy 186). In this episode, after some discussion with the two girls, Duo Jiugong finds, to his surprise, the two girls have much better knowledge than he does. When the girl in purple asks about *Fanqie*, Duo dares not touch this topic for fear of making mistakes and losing face. Then the girl in purple makes a satire on Duo. This satire is based on a Chinese idiom: "問道于盲 [asking the way from a blind who definitely does not know the way] " As they are discussing *Fanqie*, the girl in purple employs the method of *Fanqie* and produces each character in the above idiom by pronouncing two characters (the first character has the consonant of the given character and the second character has the vowel of the given character). She says to the girl in red, "in the sense of the topic (*Fanqie*, as they were talking about it) itself, isn' t it ' Wujun dalao yilu manying 吳郡大老依閭滿盈? (She was actually saying: "Isn' t it wendao yumang 問道于盲? [Isn' t it asking the way from a blind who definitely does not know the way?] According to the *Fanqie* method, if you read wujun 吳郡 quickly so that actually only the consonant of wu 吳 and the vowel of jun 郡 are pronounced, you get the pronounciation of wen 問. In the same way, dalao 大老 reads as dao 道, yilu 依閭 reads as yu 于, manying 滿盈 reads as mang 盲). The girl in red nodds her head but Tang Ao and Duo not understanding or simply ignoring her words, do not understand she is using *Fanqie* (see Li Ruzhen 113; ch. 17). When they return to the boat, they discuss the event with Lin Zhiyang, Tang' s brother-in-law, the merchant. Lin, who knows nothing about phonology, hits upon a clue by pointing out that what the girl in purple said should be some sounds spelled in the way of *Fanqie* because the girl has said such words as "in the sense of the topic itself." Awakened by this, Tang and Duo finally understand this trick played on them by the girl. In this way Tang and Duo are ridiculed as ignorant people. Through this comic episode, Li contributes a good *Fanqie* lesson.

Phonology is taken one step further in Forked-tongue Country episodes. Here, the inhabitants have tongues in the shape of a pair of scissors so that they can talk more flexibly. The language in this country is the most difficult one to learn; thus, if one learns how to speak it, learning other languages will come easily.

Forked-tongue Country country is famous for holding the key to phonological secrets. There is a saying like this: 若臨岐舌不知韵，如入寶山空手回。 [Going to the Forked-tongue Country and not learning the secret of pronunciation is the same as entering a treasure trove but returning with empty hands. (Li Ruzhen 200; ch.28)]

Li Ruzhen obviously meant to introduce this phonological secret which was actually the phonetic scheme he developed in his phonological study: *Li-shi-yin-jian-Li's System of Phonetics* 李氏音鑑. In Forked-tongue Country, Duo Jiugong talks to an old man, asking about the phonetic scheme which is taken as the key to phonological secret but is told that it is taken in that country as something precious to maintain its prestige among other nations. The old man even tells Duo that he has been offered a huge turtle shell with invaluable jewels in exchange for the phonetic scheme and he has refused because the king of the country has a strict rule: "any one who leaks the secret, no matter an official or a common subject, will be punished." The punishment is severe and ranged accordingly: those who are not married will not be allowed to marry for all their life; and those who are married have to divorce immediately. If a second offense is made, the punishment is castration (Li Ruzhen 202; ch. 28). Again, by introducing this unusual punishment, Li arouses the curiosity of his reader toward phonology.

Tang and Duo are much frustrated, but a piece of news rekindles their hopes. The heir apparent of the country has fallen from a horse and is on the verge of death. Duo brings him back to life with a special medical treatment. Even for such a favor, the king will not give them the key of phonology. Later on, Duo cures two imperial concubines of very difficult and complicated illness on the condition that the king should give them the phonetic scheme. His wish is granted, but afterwards the king regrets his decision and hopes to exchange it for a huge amount of silver, but Duo firmly refuses. Duo finally gets this phonetic scheme. In this way Li put his own academic results in phonology at a very high position. This phonetic scheme appears in the novel. It has thirty three columns with one (or two when the sound cannot be represented by one character) Chinese character(s) at the head of each, referring to the thirty three consonants and twenty two lines with one (or two) character(s) at the head referring to the twenty two vowels (with or without the final nasals). The simplicity of the phonetic scheme shocks Tang and Duo and they do not know how to use it. By reading it again and again, they gradually learn the secret. Here, it is obvious that Li was emphasizing the importance of practice in learning phonology.

In the second part of the novel, when the hundred ladies celebrate their success in passing the imperial examination, Li had them play some games linked to phonology. For instance, when the ladies are at the banquet, one of them suggests the traditional game xingjiuling 行酒令 to consume wine. They make use of forty or fifty bamboo chips. On each chip is written two requirements. One is the name of a category such as astronomy, geography, animals, fruits, flowers, fishes etc. The other is either double consonants 雙聲 or double vowels 疊韵. When one of them draws a slip, the first thing she has to do is to give a name in the category marked on the chip (for instance, if the category marked on the chip is "astronomy", she can give the name of a star), but she has to select a name that meets the requirement of double consonants 雙聲 or double vowels疊韵. If double consonants雙聲 is marked on her chip, this name should consist of two characters *beginning* with the same consonant (consonant is the beginning part of the sound of a Chinese character; If double vowels 疊韵 is marked on her chip, this name should consist of two characters *ending* with the same vowel (vowel is the ending part of the sound of a Chinese character). The second thing she has to do was to quote a sentence from a classical book and this sentence must contain one of the two characters in the name she gave at first. Li, the author, was really a good player of this kind of game, and to show his knowledge he made another lady to add one more rule to make this game more difficult: in the sentence quoted from a classical work there should also be a term which meets the requirement of double consonant 雙聲 or double vowels 疊韵. For example, the first lady picks a chip that requires a name of a flower and the two characters in the name should begin with the same consonant 雙聲. She works out such a line:

長春《列子》荆南有冥靈者，以五百歲爲春。(Li Ruzhen 608)

In this line, Chang Chun 長春 is the name of a kind of flower. The two characters in the term Chang Chun 長春 both begin with the same consonant *ch*; thus the first requirement was met. *Liezi* 列子 is the title of a classical work, showing that the following sentence was quoted from this work. The quoted sentence contains Chun 春, which is one character of Chang Chun 長春, the flower, thus the second requirement was met. Further, in the sentence there is a term of two characters: Ming Ling 冥靈 both ending with the same vowel *ing* and this is an example of double vowels 疊韵, so the third rule was met.

The second lady picks up a slip requiring the name of an ancient man' s with 疊韵 double vowels. What this lady gives is:

王祥《張河間集》備致嘉祥。 (Li Ruzhen 608)

In this line, Wang Xiang 王祥 is the name of an ancient man and both characters end with the vowel *ang*, thus it met the first requriement. *Zhang-he-jian-ji* 張河間集 is the classical work. The quoted sentence has the character Xiang 祥 to meet the second requirement. The two characters in the term Bei Zhi 備致 share the same vowel (according to the rules at Li' s time) so it is an example of double vowels 疊韵 and meets the third requirement.

The ladies play on and on. In fact, all the quotations were prepared by the author who had painfully found these to be used in this novel. In the form of these well knit lines, the author realized his purpose to teach phonological knowledge to his reader together with the enjoyment of the games. Besides this function of teaching, the knowledge employed by Li Ruzhen also serves the purpose of pleasing. In the games of consuming wine, the ladies work out many lines that show their wit and knowledge in language. A reader with some education can find a lot of joy and admiration in reading this lines.

II. Water conservancy

Because of the geographic situation of China, water conservancy has always been a main concern for all the governments. There is even a well known legend about Great Yu 大禹 who obtained great success in water control. The main problem begins with the Yellow River, the birth place of Chinese civilization. Yet, it is this same river which brought tremendous disasters to the people. It runs through the Loess Plateau 黃土高原 which is a thick layer of clay with poor vegetation and water currents bring down huge amount of silts to the areas down-stream where the Chinese settled. This accumulation of debris and refuse accumulates layer after layer the bottom of the river so that when the flood season comes, the water overflows the banks. In the history of China, there have been many records of disastrous floods causing numerous deaths of livestock and human beings, and ruining crops and farms in its path. In this case, flood control becomes one of the criteria to judge whether a government is good or whether an official is successful in his service term. Some scholars who concern themselves with public affairs also spend much time studying this problem. This was the case of Li Ruzhen. It seems that Li's interest in flood control was inherited from his father. Discussing Li Ruzhen's life, Hsin-sheng C. Kao quotes a poem written by Hsu Ch'iao-lin (Xu Qiaolin 許喬林 Li's brother in law) for the information about Li's father:

> I remember your father [Li Jieting]
> Leaving his official footprints throughout the Huai basin....
> Working on the river dike for twenty years,
> He was praised by people as an honest official.
> (qtd. in Kao 24)

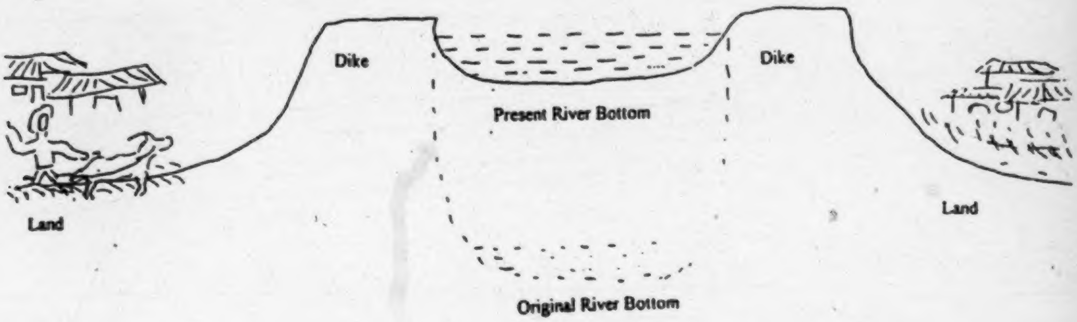
It's suggested by Hsu Ch'iao-lin(Xu Qiaolin)'s poem that Li Ruzhen read many books about water conservancy:

> ... now the [Yellow] River is flooded again,

Overflowing the land and causing disaster;
Thousands and thousands of common people
Gather resources and strength to take action....
You [Li Ruzhen] know the statesman's craft:
Immediately you should form opinions,
Familiarize yourself with books on river and drainage,
Properly apply ancient methods to their best advantage....
(qtd. in Kao 23)

Li became a minor official in charge of flood control in Henan, a province which suffered most miserably the floods in the history of China, and there happened a very bad breach of dyke when Li was there (Zhu Meishu 138). Li gained direct knowledge of water conservancy when he was in Henan. All these observations ended in his novel.

In order to talk about water conservancy, Li arranged the following situation: Tang Ao, Duo Jiugong and Lin Zhiyang come to Country of Women where the relations between women and men is the opposite to that of the author' s world. In this country a woman sits on the throne and all the positions of officialdom are taken by women. There, women behave and dress like men in Li' s society, while men behave in the manner of women. Men are dressed like women and their feet are bound with cloth, a traditional custom in China for several hundred years. Because of his handsome appearance, Lin Zhiyang is held in the palace by the queen to be her male concubine. Tang and Duo are much worried about how to free him. At this time, a royal notice is displayed asking some able person to deal with the flooding problem which has brought the country to the brink of disaster. Tang answers the royal notice claiming that he is an expert on water conservation. He demands that if he could solve the problem, his companion Lin should be released. The queen is facing a possible rebellion of her subjects, so that after much argumentation and bargaining she accepts Tang' s demand. Flooding in Country of Women paralleled the situation in China. When the river was flooding, the only thing the government did was to raise dikes, but when the flood withdrew, the government would not do anything to dredge the river. In China, even if the government wanted to, it could usually do little, because there were always more urgent matters such as the constant social turmoil. So the dikes became higher and higher, and in some sections, the bottom of the river became actually much higher than the lands along it, a rare scene in the world.



If a part of the dike should break, disaster would come to the people living along the river. Only in some peaceful periods, when governments were strong, could something be accomplished and this achievement would be greatly praised.

Li's central idea to control floods was to dredge the river, a solution already mentioned by Yu. Thus in the novel, when he was asked by the brother of the queen, Tang Ao answered:

> 若論大概情形，當年治河的，莫善于禹。吾聞禹疏九河，這個‘疏’字，却是治河主腦：疏通衆水，使之各有所歸，所謂‘來有來源，去有去路’。根源既清，中無壅滯，自然不至爲患了。
> [Talking about water conservancy generally, Yu is the best man in bringing the rivers under control. I hear that Yu had dredged nine rivers, so the most important thing in water conservancy is to 'dredge.' That is, dredge the rivers to lead the water to where it belongs. This is like what it is said: it comes from its source, and goes to where it belongs. As we make clear its source and lead it to where it belongs without obstruction, the water won't be able to cause disasters. (Li Ruzhen 251-2; ch. 35)]

When Tang Ao is investigating the river situation, he explains it by making an analogy with a bathtub put on the roof of a house [就如以浴盆置于屋脊之上 (Li Ruzhen 254; ch.36)]. If the water overflows the dike, it goes down like the water in the bathtub on the roof and flooded all the nearby areas. The best way is to put the bathtub into the earth to make the bottom of river below ground so that the water will not overflow the banks any more.

To put this bathtub down into the ground, they have two major tasks. On the one hand, they have to dig the river bed deeper at the proper sections; on the other hand, they have to cut the curving river course straight to let the water sweep away the silts. Tang Ao says to the brother of the queen:

> 凡河有淤沙，如欲借其水勢順溜刷淤，那個河形必須如矢之直，其淤始能順流而下。昨看那邊河道到了刷淤之處，河路不直，多有彎曲，其淤遇灣即停，何能順溜而下？再者，刷淤之處，其河不但要直，并且還要由寬至窄，由高至低，其淤始得走而不滯。假如西邊之淤要使之東去，其西邊口面如寬二十丈，必須由西至東，漸漸收縮，不過數丈。是寬處之淤，使由窄路而出，再能西高東低，自然勢急水溜，到了出口時，就如萬馬奔騰一般，其淤自能一去無餘。 [When there is silt at the bottom of the river and you want to make use of the currents to flush down the silt, the river course must be straight as an arrow, and the silt can come down with the currents. Yesterday we had a view of the other river. At the section expected to sweep away silt, the river course is not straight and has several bends. While the silt stops at the bends, how could it go down the river? Another thing is that the river course, at the section expected to sweep away silt, must be shaped in this way: the upstream is wider, the downstream is narrower, and the river bed goes from the higher to the lower, then the silt would go down without obstruction. For example, you want to sweep away the silt in the west to the east. If the width of the river in the west is twenty *Zhang* ,[1] it should become narrower gradually from the west to the east until it is only a few *Zhang*. Then the silt at the wide section of the river could go out through the narrow section. And if the water goes from the high to the low, it naturally become rapid and torrential. When it comes to the narrow opening, it goes like ten thousand horses galloping, and the silt will go with it without any remnants. (Li Ruzhen 255-6; ch.36)]

Li's comments on silt flushing is quite accurate. It is obviously the result of keen observation and painstaking study. Today's water control also has the same problem of silt flushing. In China, a lot of dams have been built on the rivers. Each dam has a silt flushing section. It works in quite the similar way as Li' s suggested here: the width of the river becomes narrower and the water goes from high to low (people chose such sections to build a dam which can hold high the water surface). In the novel, Tang' s idea was put into practice on a large scale. To achieve it sooner, Li' s raised the problem of tools. In that country, metal tools were forbidden for fear of the possibility that they could be used as weapons by some rebellious people(a satire made on the feudal totalitarian society, as pointed out by Hu Shi [see Hu Shi 32]). Tang Ao took out the iron which they brought with them as ballast. He instructed the blacksmiths assembled to produce iron tools in a short time. This idea of improving tools is important. In China there is an idiom saying that: 工欲善其事，必先利其器 [If a craftsman wants to perfect his product, he must first improve his instrument]. Today, modern tools as large loaders, tractors, cranes, etc. are employed in water conservancy and are achieving much better results in water control.

With plans and tools ready, the project is put into practice. Tang Ao asks the workers to build up dams at several chosen points to separate the river into several sections. Then they lift water by waterwheels from the first section into the second section. They dredge the first section when it is dry and then open the dam to let the water come back. When the river bed is deeply cut, it is very difficult to raise the silts up from the bottom of the river to the surface ground and they make use of pulleys to raise the silts. This is a project that need huge amount of labor, but as the people in the country have suffered much by the floods, they all take an active part in the task. Thus the project is completed in a short time.

Li' s ideas about water conservancy provided some valuable insight and expressed his well-meant hope to control floods and to make life easier for the people. We understand that his knowledge had its historical limitation. Today, several huge dams have been built upon the Yellow River with modern technology; yet the problem of water conservancy hasn' t been solved satisfactorily. In Chapter One IV, I quote Peter Munz as saying "Everybody agrees that knowledge has grown and that it was not just there, one fine day. knowledge is therefore a historical phenomenon, something that happens and changes as

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[1] Chinese measure, roughly equals 3.3333 meters.

time passes" (Munz 20). This knowledge of water conservancy is an example to show this idea.

By employing his knowledge in water conservancy, Li meant to teach people the best way to control floods; on the other hand, he was making suggestions to the government. If governments could adopt his idea of water conservancy, floods would be more effectively controlled and people could live better.

III. Li's concern with society

Li paid much attention to social problems. In *Flowers in the Mirror*, by creating a country where people shuned money he satirized those people who take making money as the supreme purpose of life. He also put forward his opinions toward some customs which he thought ugly or bad. He raised the problem of women' s plight, and expressed his ideas about this social problem. In this way, he hoped to teach people so that the society could become better.

Money has been taken as the root of all bad things in the society by some writers and they put their ideas in their literary work.[1] Li, in his novel, made it clear that, in an ideal society, people should not chase money. Thus in *Flowers in the Mirror*, he created a Country of Gentlemen where all people behaved as 君子 [gentlemen]. In Chapter 11, when Tang Ao and his companions arrive in this country, they see something in the market which is beyond their imagination.

> 説話間來到鬧市。只見有一隸卒在那里買物，手中拿著貨物道：“老兄如此高貨，却討恁般賤价，教小弟買去，如何能安！務求將价加增，方好尊教。若再過謙，那是有意不肯賞光交易了。”只聽賣貨人答道：“既承照顧，敢不仰體！但適才妄討大价，已覺厚顏；不意老兄反説貨高价賤，豈不更教小弟慚愧？況敝貨并非‘言無二价’，其中頗有虛頭。俗云：‘漫天要价，就地還錢。’今老兄不但不減，反要加增，如此克己，只好請到別家交易，小弟實難遵命。” [When they (Tang Ao and Duo Jiugong, the old seaman) arrive in the market, they see a bailiff making a purchase. Holding

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[1] For instance, *A Manuscript Found in a Copper Cylinder* written by Canadian writer James De Mille (1827?- 1880). De Mille described in this novel a country in Antarctic where the inhabitants took money and wealth as evil. Every one tried to put his wealth upon others. Only those who were most careless received a lot of wealth. The most glorious and powerful person in the country was the grand beggar, while the most despised person was some one living in palaces like a king.

> the good, the bailiff says to the seller: "Your good is of such a high quality, yet you charge only so little money. If I bought it this way, I could never have peace in my heart! Please charge more money, then I would obey you. If you insist on this low price, then you don't mean to sell it."... The seller answers: "I am mostly grateful that you showed interest in buying my goods. The price I offered is already so high that I feel it is shameless for me. My price is indeed higher than it should be, yet you still say that my price is too low and my good is worth more. I am really embarrassed. There is a saying: 'The seller asks for as high as possible, the buyer offers as low as possible.' You don't ask me to reduce the price, instead you ask me to increase it. In this way, the only thing I could do is to ask you to go to another store. Forgive me if I really could not accept your offer."(Li Ruzhen 65-66, Ch.11 my translation)]

This is universal in this country. The seller persists in taking less money for his goods, yet the buyer argues to pay more for what he wants to buy. By arranging such descriptions, Li was laughing at those who saw nothing but money. A Chinese idiom best describes the phenomenon that everybody seeks his own interest: "天下熙熙, 皆爲利來 : 天下攘攘, 皆爲利往 [Oh, such a busy crowd, they come here, for benefit; they go there, also for advantage-my translation]." Through this episode in the Country of Gentlemen, Li hoped to change the idea of values in the mind of people so that they would not be so greedy and the society would benefit.

The discussion over customs is also significant in the Country of Gentlemen. For instance, when Tang Ao and his men are out of the market, they meet with two old men, the Wu brothers, and are invited by the brothers to their home to have a chat over tea.

The first custom discussed is the Chinese geomancy *Fengshui* 風水 (the belief and practice that the locations of the tomb of a family's ancestry and the house of a family have a great influence on the future fortune of the family). The believers of *Fengshui* usually will ask a geomancer to come to decide the location of the tomb if an important member in the family passes away. This is a kind of very formal activity and often the geomancer charges much money. In Li's time, it often happened that the coffins of the dead were temporarily stored somewhere (as in a temple or buried shallowly, because the family did not have the time or money), waiting for the final location of the tomb to be decided. Sometimes the final burial would be delayed by several generations. So in the novel, Wu Zhihe, one of the brothers, says that he does not think it is right and the correct way is to bury the coffins as soon as possible. If the tomb is located in a safe place without being threatened by floods, then it is a good place. He asks that, among those who have buried the coffins in a good place, how many have really become prosperous (he meant that there are really very few families becoming prosperous for this reason)? He holds that only by doing good deeds (not by the location of the tomb) one family could become prosperous (see Li Ruzhen 71-2; ch.12). Clearly, Li was persuading people to do good things rather than to spend money and time on deciding the location of tombs.

Then Wu Zhixiang, the other Wu, says that he has heard, when a family has a newly born baby, they will hold a big banquet to celebrate the third day, the full month day, the hundredth day and the annual day of the baby's birth. On this occasion, he continues, they (especially the rich) will kill an excessive number of pigs, lambs, chicken, and ducks. He expresses his doubts about this custom. Involving the Chinese adage: "上天有好生之德 [The heaven blesses those who let others live on— my translation], Wu asks why should so much blood shedding bring good fortune, how could the child get bless from the heaven (Li Ruzhen 72-3; ch. 12). Li's criticism of this custom focuses on two points: to persuade people to give up the unnecessary extravagance and waste, and to suggest people shall avoid killing and overkilling animals.

Then Wu Zhixiang talks about the customs some people adopted in sending their children into Buddhist temples. It is believed that, in this way, the children of poor health can become healthy, and the children who are doomed a short life can live much longer. Wu thinks this is foolish. He points out that Buddhists never marry. If this happen in a large scale, the population will ultimately decrease. He suggests to use Confucian' idea to stop this behavior: "the length of one's life is predetermined 壽夭有命 and if one does not leave after him a descendant, he commits principle crime 無后爲大 (see Li Ruzhen 73; ch.12).

Some critics have remarked that Li's attention to the plight of women adds significant value to his work. Thus, the prominent Chinese scholar Hu Shi 胡適 says that "Li noticed in his wide reading the problems of women that had been neglected for thousands of years. He is the first to raise this problem of women in China. His *Flowers* *in the Mirror* is a novel dealing with the problems of women"(Hu Shi " Introduction to *Flowers in the Mirror* 鏡花緣的引論 " 19).

In ancient China, in a general sense, women did not have the right to decide their marriage. Li did not get as far as to object this rule: a boy's or a girl's marriage should be decided by his/her parents. However, he saw the custom related to marriage as incorrect: for parents to decide marriage by fortune-telling. The Chinese use twelve animals to represent the twelve Earthly Branches and to symbolize the year in which a person is born. The twelve animals are rat, bull, tiger, rabbit, dragon, snake, horse, lamb, monkey, chicken, dog and swine. Some characteristics drawn by people from these animals are applied to the person born in the related years. For example, a person born in the year of rabbit could be mild, clever, but not ambitious. And based on man's imagination, some combinations of pairs are considered favorable and some unfavorable. For instance, a rat a good friend of a bull and a tiger can not go together with a dragon. In ancient China, before parents decide the marriage of their children, they would often invite a fortune teller to examine whether the combination would be a favorite one or not based on the exact birth time (which hour, which date, which year). If it was not a favorite one, the parents would not give consent to the marriage. Li held that a good marriage should not be decided by such fortune-telling, but should be based on virtues, age, look, and family status of both sides 惟以品行、年貌、門第爲重 (Li Ruzhen 79; ch.12). Judged from today's popular view of marriage, Li's idea of marriage can not gain complete consensus from most people, but compared with the idea of deciding marriage by fortune-telling, it is quite ahead of times.

Li devoted much space to attack the cruel custom of women's foot-binding, which he took as one of the most telling proofs of women's plight. In the Country of Gentlemen, Wu Zhihe says that he has heard that in the country where Tang Ao and his companions came from there is the custom that women have to have their feet bound. He observes that young girls are made to suffer a lot when this foot-binding is applied to a girl. Usually the girl would hold her feet and cry. Sometimes it even causes bleeding and the skin and flesh of her feet might become rotten. At this time she could not sleep throughout the night and could hardly eat anything; thus other diseases could occur. Wu

Zhihe expresses that when he first learned it, he had thought this might be a punishment to a girl who has committed some capital crime and her mother could not bear to put her to death. But to his surprise, he found out that it was for the good looking of the girl. It had been supposed that a girl was not good looking if her feet were not bound! Wu, as an inhabitant of the Country of Gentlemen, can not comprehend this cruel custom. He argues, if a girl had a big nose and cut it smaller to look better, or she had a high forehead and cut it lower for the same purpose, people would surely say that she maimed herself and just failed to achieve her purpose of making herself looking better. He questions why people should take the disformed feet as beautiful?... He believes that the sage would like to see this custom die, and the wise man would cast it aside (see Li Ruzhen 78; ch 12).

Tang's travels in the Country of Women presented Li with another opportunity to consider the plight of women. In this country women are dressed in the way of man and hold all official positions while men are dressed like women and do all the housekeeping as women in other countries. Here also the question of foot-binding was raised.

When Tang Ao and his men arrive in this country, it happens that Lin Zhiyang, Tang's brother in law, is forced by the king (a woman) to be an imperial concubine. Before the wedding, he has to receive the ceremony of binding feet. Four palace maids (actually four physically strong men) hold him firmly so that he can not move his feet a bit. They apply some vitriol powder between his toes, then begin binding his feet with lengths of white damask silk. They squeeze his toes tightly and make his feet in the shape of a bow. After having bound two folds, they stop and sew the folds tightly with threads; then they continue their binding. When they finish, Lin feels that his feet are so painful as if being burnt by charcoals. At night, Lin, taking a chance that nobody is nearby, unties the white damask silk. But as soon as he is found out, he is punished by being beaten on the buttocks and his feet are rebound (see Li Ruzhen 238-9; ch. 33). In half a month, his toes are rotten, his feet become two bows and bleed all the time (see Li Ruzhen 240; ch. 34).

This is a very vivid description of the procedures of foot-binding and an angry condemnation of this cruel custom! Here we can also see Li’ s good knowledge in women’s problem.

As shown by Li’ s detailed, yet ironic, treatment of the foot-binding question, *Flowers in the Mirror* makes out of the plight of women one of its central topics. First, it is obvious that he deliberately selected the reign of Wu Zetian, the only empress in the history of China, to be the setting of his novel. Clearly many episodes in the novel were made possible through this background. In the long history of feudal China, women had always been in a lower position than men, suffering from a lot of corrupt customs and prejudices. In most cases, they could not receive education as men. A scholar in the Ming Dynasty named Chen Jiru 陳繼儒 once said, “A woman’ s virtue is her ignorance 女子無才便是德 (qtd. in Zhu Meishu 93) and his words have been taken as true by many people. Li advocated that women should receive an education and should improve their position in society. The Black-teeth Country episode, in which we are told that women were highly preocuppied with study, offer a good example of Li’ s treatment of the question. Here, women did not pay so much attention to how they dressed and how they decorated themselves, as women do in other countries, but paid great attention to how many books they had read and what knowledge they had acquired. In this country, when a girl came to marriageable age, if she had acquired a reputation for possessing knowledge, many young men would ask her hand in marriage. If this were not the case, very few would be interested in her. The girls who argued with Tang Ao and Duo Jiugong the old seaman about phonology mentioned in section I of this chapter are two representatives of them. In *Flowers in the Mirror*, there are many well-educated girls and quite a few of them were skillful in the martial arts and served the public good. It is obvious that Li disagreed with the traditional idea that women should limit themselves to housekeeping. He thought women should hold an equal position with men, in study and in action.

In the history of China, only men could take part in the imperial examinations to enter officialdom. In *Flowers in the Mirror*, Li expressed the thought that women should hold an equal position with men both in study and in action in a fictional form that the Empress ordered to open an imperial examination for unmarried young women. Hence, Li’ s novel devotes much space to the stories of these young women, showing their knowledge and talent. Finally the one hundred girls (the incarnations of the one hundred flower fairies) all passed the examination and earned the title of “talented lady.” Beside the happiness from these successful women, we can also see Li’ s request for women’s equality with men.

Li showed great interest in social problems. First, he made satire on the basic idea taken by many people: the more money one has, the better he lives by creating the situation in the Country of Gentlemen where, to the opposite of the situation in the country where the main characters came from, people had different idea of values. The sellers asked for less, and the buyers offered to pay more. The astonishment felt by Tang Ao and his companions strengthened the satire. He saw some incorrectness in some social customs and expressed his opinion toward them. He meant to persuade people to give up these negative customs and cause some reform in the society. His attention to the women’ s problem has been accepted as of particular important meaning by some scholars. He advocated that women should have equal position as men in the society, and supported this idea by creating the Country of Women where women took all the public official positions, by making use of the reign of Wu Zetian, the only empress in the history of China, as the background of his novel and creating the fictional form that all the one hundred girls passed the imperial examination and won the tittle of “Talented Ladies”as well as by making women in Black-teeth Country very much involved in learning. The dramatic episode of Lin, the merchant, suffering a lot from the foot-binding in the imperial palace of the Country of Women gives the reader an enlightenment toward the plight of women in China. Li was a good observer and thinker. He hoped to cause some reforms in this world.

IV. Scientific knowledge

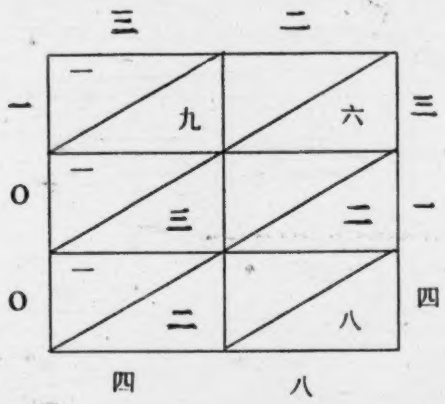
In Li’ s time, the main pursuit of the literati was to enter officialdom by way of passing imperial examinations. In his famous satirical novel *The Scholars*, Wu Jingzi 吴敬梓(1701—1754), makes a vivid descriptions of this kind of scholars. For instance, one of the scholars named Fan Jin did not pass the examinations until he was over fifty, and another one named Zhou Jin passed the examinations only when he was in his sixties. All their energy and talent was being used in the name of careerism. Li Ruzhen, however, did not belong to his kind of scholars. He did not limit his knowledge within a field of preparation for the imperial examinations, instead he tried to encompass all the fields of knowledge available to him. He even studied mathematics and physics, something very rare for scholars of his time, for scientific knowledge had never been part of the imperial examinations. As a result, his all-embracing novel also displayed knowledge in scientific matters.

Some scholars have discussed the mathematical knowledge and scientific knowledge in *Flowers in the Mirror*. Hsin-sheng C. Kao, when introducing comments on Li Ruzhen, quoted a paragraph from Yu Wang-leun (Yu Wanglun)' s "Knowledge of Mathematics and Science in Ching-hua-yuan." This passage gives us a rough idea of Li' s knowledge in mathematics and physics:

> The mathematical problems put forward by the women scholars include the rule of false position [yin-nü suan-fa],calculation of the circumference [yuan-chou suan-fa], the cyclic square [yuan-fang], problems in arithmetical progression [ch'a-fen fa], problems about "pheasants and rabbits caged together" [chih-t'u t'ung-lung], multiplication by means of the gelosia [p'u-ti-chin], calculation with counting rods [ch'ou-suan], the division table [kui-ch'u fa]....Principles of science discussed by the women scholars concerned the weight of matter and the velocity of sound. (qtd. in Kao 39)

Li displayed his skills in mathematics by means of some guessing games, i.e. "brainteasers." In the second part of *Flowers in the Mirror*, the episode describing the banquet held in the garden of Bian Bin, the principal examiner of this special imperial examination for ladies, provides a good example. Having broken into small groups, the Hundred Talented ladies have chances to show off their skills at discussing various learned matters. One of the groups take up mathematics. One of the ladies, Liao Xichun offers a mathematical puzzle. She tells the group that when she left her hometown to take part in the examination, her relatives' daughters had come to see her off. It happened that somebody had sent her a plate of fresh fruit at the time, which she passed around. Having given seven to each girl, she said there was one left. But if she had given eight to each girl, she would have needed sixteen more. The question is how many girls and how many fruit. A lady Situ Wu' er answers that it is easy. Using the rule of false position (yin-nü suan-fa), she explains that if the number of the girls is wanted, first she has to deduct seven (if every girl should get seven) from eight (if every girl should get eight), and gets the result of one which should be used as *fa* 法 denominator. Then one (one more left when each girl should get seven) should be added to sixteen (sixteen were needed if each girl got eight), and the result is seventeen which should be used as *shi* 實 (numerator). The value of the fraction is seventeen; then there are seventeen girls. Seventeen multiplied by seven (if each girl should get seven fruit) is one hundred and nineteen. Add one (one more left) to it and the result is one hundred and twenty; then there are one hundred and twenty fruit. (Li Ruzhen 562-3; Ch. 76)

Another episode related to mathematics also happened in the big garden of Bian Bin, where the banquet is being held. In another group of girls, a lady Qing Tian, pointing to the round table, asks Mi Lanfen what is the circumference of it. Mi Lanfen takes the diameter of the table by a ruler and got 32 *cun* (one *cun* is 3.3333 cm). Then she draws a diagram like this:



(Li Ruzhen 584)

The diagram is an ancient way to do multiplication. Here it is 32 (on the top of the diagram) multiplied by 3.14 (π, at the right side of the diagram). A critic Wang Qiongling has explained that the calculation should be done in this way: firstly, 二 (two) at the top of the right column is multiplied by 三 (three), then 一 (one), then 四 (four).

The result is put in the related square with a slant. The number less than ten is put under the slant, the number for ten(s) is put above the slant. Then three at the top of the left column is multiplied by three, one, and four. Then count from the right bottom along the slants. Add all the numbers in the same slant lane. If bigger than ten, put the number for ten(s) above the slant in the left square higher than this lane. Put the sum of each slant lane in the outside space of each lane. Then read the numbers on the left side of the diagram from top to bottom and then the numbers under the diagram from left to right; this is the product of the multiplication. In this case, the result is 100.48 *cun*. This way of doing multiplication by such a diagram is called "p' u-ti-chin 鋪 地 錦."(see Wang Qiongling 441) In this episode, Mi Lanfen used 3.14 as π, the ratio of the circumference of a circle to its diameter. She tells Chunhui, another lady that more exactly, π should be 3.14159265 (Li Ruzhen 584). In this way, Li introduced some mathematical knowledge to the reader. The pursuit of more exact value of π has been an outstanding event in the scientific development. In the time of Northern and Southern Dynasties (420-589) in China, a famous mathematician Zu Chongzhi (祖 冲 之 429-500) worked out the value of π as between 3.1415926 and 3.1415927, which was quite advanced at the time (see Ch1,VI of this thesis). In the reign of Kang Xi (1662-1722) in the Qing dynasty, the value of π is 3.141592653 in the *Principles of Mathematics* compiled by Mei Cheng 梅 成 . A mathematician of Li' s time, Zhu Hong 朱 鴻 was able to reach the thirty nine number after the decimal point in calculating the value of π (see Wang Qiongling 440-1). Li here was to impress the reader with the piece of mathematical knowledge by giving the value of π as 3.14159265. By the episode related to lady Mi Lanfen, he also explained that in daily life, it was enough to use 3.14 as π.

The question of "algebraic curves"(another "brainteaser") is discussed in Chapter 92-93, where a lot of lanterns are on exhibition in a building of two floors. On the first floor there are two kinds of lanterns. The first kind of lantern consists of one big ball and two small balls. The other kind consists of one big ball and four small balls. In this episode, a lady Baoyun asks Mi Lanfen (the girl who does the calculation of "p' u-ti-chin 鋪 地 錦 in the above paragraph) to tell how many lanterns are in each kind. Mi Lanfen asks for the total number of big balls and small balls. Baoyun tells her the total number of big balls is 360, and the number of small balls is 1200. Mi Lanfen, after some calculation in her mind, tells Baoyun there are one hundred and twenty lanterns of the first kind and two hundred and forty lanterns of the second kind. Lanfen tells Baoyun and other ladies that she has employed the method of "pheasants and rabbits caged together (ji-tu-tung-long 鷄兔同籠). According to Wang Qiongling, this method appears in some ancient Chinese mathematical works. In this question, usually we know the total number of the pheasants and rabbits, and the total number of feet. We are asked to tell the number of pheasants and the number of rabbits. Wang states that the process is:

the number of rabbits = the number of feet/2- the number of heads

the number of pheasants = the number of heads - the number of rabbits

(Wang Qiongling 446)

Accordingly, in this episode, Mi Lanfen says she divides 1200 (the number of the small balls) by 2 and gets 600. Then she deducts 360 (the number of the big balls) from 600 and gets the difference as 240 which is the number of the lanterns of the second kind (each lantern had one big ball and four small balls). After that, she deducts 240 (the number of the lanterns of the second kind) from 360 (the number of the big balls) and gets the difference as 120 which is the number of the lanterns of the first kind (each lantern has one big ball and two small balls). The way she counts the lanterns on the second floor is a little more difficult but roughly an extension of the same method (see Li Ruzhen 700-1; ch.93).

Li also introduced some knowledge of physics in his novel. On the same day of the banquet, there are two problems concerned with this science. One is to calculate the weight of an object according to its specific gravity and volume, the other is to calculate the distance according to the velocity of sound and the time takes to reach somewhere. The following episode is related to the calculation of weight. A lady Song Liangzhen, in the group activities, points to two cubes of agate (one red, one white) and asks Mi Lanfen (who seems to have good knowledge) whether she can work out the weight of each. Lanfen answers if she knows the size she can do it. By knowing the size of agate she works out the volumes of the two cubes of agate and then she works out the weight of each cube of agate by using different specific gravity for different masses. She tells Song Liangzhen:

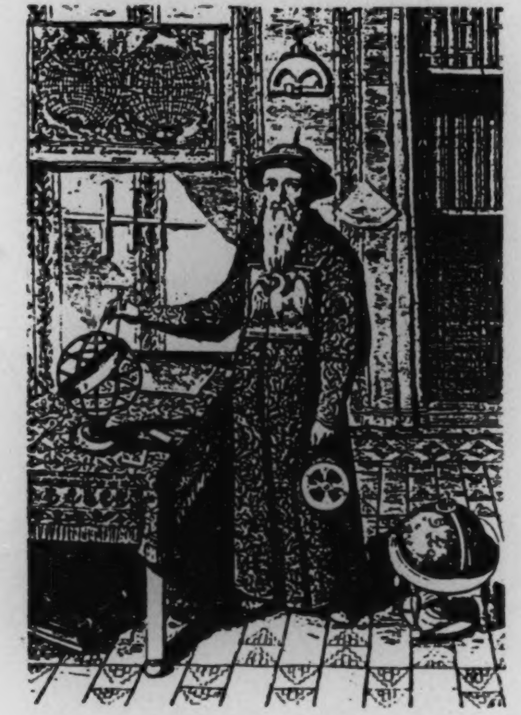
> 凡物之輕重，各有不同，如白銀方一寸重九兩，紅銅方一寸重七兩五錢，白銅一寸重六兩九錢八分，黃銅一寸只重六兩八錢。
> [The weights of different mass are different from each other. For instance, a cubic *cun* of silver is nine *liang*, that of copper is seven *liang* five *qian*, of copper-nickel is six *liang* nine *qian* and eight *fen*, and of brass is only six *liang* and eight *qian*. (Li Ruzhen 586) my translation (*jin, liang, qian, fen* are all Chinese measure units for weight, and they form into a system in such a way that one *jin* equals ten *liang*, and one *liang* equals ten *qian*, so on and so forth.)]

While Mi Lanfen is doing her explanations about specific gravity, dark clouds come and a lightning flashes; fifteen seconds later, there comes the sound of the thunder. In this way, Li transited to the second problem of calculating the distance according to the velocity of sound and the time taken for it to reach somewhere. Mi Lanfen tells other girls that she can calculate the distance of the thunder, and everybody there are interested. They count fifteen seconds has passed between the time when they saw the light and the time when they heard the thunder sound. Mi Lanfen works out that the thunder happened somewhere ten *li* and one hundred and twenty eight *zhang* away for she knows the velocity of sound is one hundred and twenty-eight *zhang* five *chi* and seven *cun* (ten *cun* equals one *chi*, ten *chi* equals one *zhang*, and one hundred and fifty *zhang* equals one *li*) per second (Li 586; ch.79) which, according to Wang Qiongling, is quite close to the present knowledge of sound speed of 330 meters per second (Wang Qiongling 450). Wang Qiongling points out that after the middle period of the Ming Dynasty, the Western knowledge and theories about the nature was gradually introduced into China (see Wang Qiongling 449). Li, as an eager learner, paid some attention to this new knowledge and wanted to promote it to the common people.

The interest in flight is very ancient. Before a real plane was invented, many writers had talked about the possibility of a manmade flying vehicle. Li also turned his attention to this ancient pursuit. It is interesting to note that there is a flying vehicle in *Flowers in the Mirror*. In Chapter 28, a country named Zhourao is mentioned. The inhabitants of Zhourao Country could manufacture flying chariots. They keep the skill from being known by inhabitants of other countries (Li Ruzhen 201). In Chapter 66 we read that after the princess of the Country of Women arrive in China, her uncle takes the flying chariot to fetch her for something emergent. He receives the order from the queen to rent a flying chariot from Zhourao Country at great cost. This flying chariot can hold two passengers and cover two to three thousand *Li* (Chinese measure, roughly equals a half kilometer) every day. When the wind is blowing in the right direction, it can even cover ten thousand *Li* (Li Ruzhen 482). In Chapter 94, when the princess and her uncle are leaving for her homeland, we finally have a chance to have a good look at this flying chariot. It is not high, only as high as a man' s waist, with the length of nearly four *Chi* (one *Chi* is about 0.33 meter) and the width of over two *Chi*. It is made of willow wood and very light so that it is easy to control. The windows are covered with gauze. Compasses are fixed on the four walls of the chariot. At the rear there is a wooden rudder. Under the chariot are hundreds of copper wheels of different sizes. There are three keys to control the actions of taking off, flying and landing. If the pilot wants the chariot to go right, he should just turn the rudder to the left, and vice versa. When the wind is going the right direction, the pilot can set up the sail and the chariot can fly faster. When everybody is on the chariot, the pilot uses the key to start the machine and all the copper wheels turn immediately and the chariot rises into the air about ten *Zhang* (33 meter) above the earth and flies to the west (Li Ruzhen 709-10). Li made use of the knowledge available at his time and tried to explain how it could work. This attempt of Li to give a detailed explanation of the mechanism of a flying vehicle is particularly interesting. It shows that Li had a scientific will to explain this machine rather than take it as something like the "flying carpet" that functions more as something magic. It is quite correct for him to imagine that the air has the similar nature as water, and the flying vehicle, like a boat, needed a rudder. This is a mark of scientific enlightenment in the Chinese mind. Even though the mechanism of his flying chariot may sound ridiculous to today' s reader, his efforts trying to explain the mechanical function of this flying vehicle is valuable. Another aim of Li to make such explanation of the mechanism of the flying chariot is to achieve verisimilitude. In Li' s time, some people, especially some intellectuals, started to know something about Western science. Li could mean to make this kind of flying vehicle more plausible to these readers by making such explanations.

In Li' s time, some Western scientific knowledge had been introduced into China. In the sixteenth century, [1] some Jesuit missionaries went to China along with the traders. Among the well known was Matteor Ricci. In *China: An Integrated Study* by Arthur Cotterell and David Morgan, we read:

> Matteo Ricci landed in China in 1583 at the age of 31. ... His gifts to the Emperor included a crucifix and paintings of Christ and the virgin Mary— they were not well received. However, two clocks sufficiently impressed the court to grant him a favoured position as a scientist and translator rather than as a preacher. Some influential converts were made, and increasingly Jesuits were entrusted with the preparation of maps, translations of such books as encyclopaedias and Galileo's writings. In 1611 Father Adam Schall headed a team of priests in revising the Imperial Calendar. (216)



Father Adam Schall as a mandarin of the first class

(Cotterell and Morgan 217)

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[1] The Jesuit missionaries started to go to China much earlier. According to Donald F. Lach, as early as the later Middle Ages missionaries already made converts in India and China as they sought to spread Christianity among the pagans of Asia (Vol. 1 Book One 3), but they became very influential in the 16th century as they were accepted into the court.

These Europeans brought scientific knowledge to China, but the emperor Shizong (reign 1723-1734) in the Qing Dynasty applied a “close door” policy which lasted until 1840 when the Opium War broke out. During this period of time, the introduction of Western knowledge was forbidden and some scholars turned to the study of ancient Chinese books (see Wang Qiongling 450). The knowledge displayed in Li Ruzhen’ s *Flowers in the Mirror* reflects this background. It contains some Western scientific knowledge as those related to physics and some Chinese scientific knowledge as those related to mathematics. But the knowledge of science was hardly known by common people at the time. Li became a well learned scholar by encompassing all the knowledge available to him and he hoped to promote a general awareness of science among the common people. In this sense, the scientific knowledge employed by Li in *Flowers in the Mirror* serves the function of teaching. Li’ s attempt to introduce scientific knowledge to the common Chinese people is meaningful in preparing this ancient country— China— to face modern times.

V. The classics

Flowers in the Mirror is replete with reference to the Chinese classics. This is explained by the nature of its author’ s attitude towards these works. Although Li Ruzhen’ s position towards the imperial examinations is well known, still, he was formed in the mold of a traditional scholar, by definition, a traditional scholar is a person who displays considerable knowledge of the classics. In what follows, we shall examine this question and will show that Li Ruzhen not only displayed this knowledge, but often departed from the tradition by offering sharp opinions.

In Chapter 17, Duo Jiugong, the old seaman, and the two girls in Black-teeth Country have a talk about a poem taken from *The Book of Songs*. This poem is titled as “Beating the Drums 擊鼓.” The whole poem has five stanzas and each has four lines. The main idea of the poem is concerned with a soldier who became weary of the endless wars and missed his wife. The first stanza says the soldier had to go south with the troops in the rumble of the drums. The second stanza says the soldier was involved in the war for a long time and was not allowed to go home and he was sad. The third stanza talks about a situation near woods, which caused different interpretations of scholars. The fourth stanza says the soldier remembered that he and his wife promised to live together for ever. The fifth stanza says the soldier was in despair that he could not keep his promise with his wife for the endless wars.

The girl in purple raises the problem in the third stanza by asking what is the meaning of the sentences in the stanza:

爰居爰處,爰喪其馬.于以何求?于林之下.(qtd. in Yang Renzhi 42)

Duo answers that, according to the interpretations of Zheng Xuan 鄭玄 and Kong Yingda 孔穎達, two famous researchers of *The Book of Songs*, it was the soldier speaking to himself: "我等從軍,或有死的`病的,有亡其馬的，于何居呢?于何處呢?于何喪其馬呢?若我家人日后求我,到何處求呢?當在山林之下 [Since we joined the army, some died, some are ill, some lost their horses. Where have we lived? Where have we stayed? Where have we lost our horses? In future if my family members want to look for me, where will they find me? My body will be in the mountain woods (Li Ruzhen 114)]."

Speaking through the girl in purple, Li gave his own interpretation of the above four sentences. The girl in purple says that, in her opinion, the soldier was in a mental state of confusion for not being able to go home. He was absent minded. Hence, according to Li, the four sentences mentioned above were saying that 偶于居處之地,忽然喪失其馬;以爲其馬必定不見了,于是各處找求;誰知仍在樹林之下 [once he and his fellow soldiers took up quarters somewhere, and suddenly found that his horse was lost. He hurried to look around for it and finally found the horse was still in the mountain woods (Li Ruzhen 114)]. This interpretation is brought out by Wang Qiongling who writes that it is a reasonable interpretation, for it is not in contradiction with the general sense of the context (Wang Qiongling 452). Li's interpretation is now well accepted and n Yang Renzhi's *Modern Translation and Annotation of* the Book of Songs

詩經今譯今注, the translation of the above sentences is the same as Li's interpretation (see Yang Renzhi 42).

In the same chapter, Li raised doubts about the traditional interpretation of one sentence in Confucius' *The Analects.* Here again the girl in purple asks Duo the meaning of 顏路請子之車，以爲之椁. Duo answers with a laugh that all the researchers since the most ancient times have taken this sentence as to mean that when Yan Yuan 顏淵 (one of Confucius favorite disciples, died young) died, Yan Lu 顏路 (Yan Yuan's father) asked Confucius to sell his carriage to get money to buy the outer coffin 椁 for Yan Yuan. Now unsure, Duo asks the girl in purple whether she has some new interpretation. The girl answers that the above interpretation is questionable in that if Yan Lu was too poor to buy the outer coffin for his son, he could ask Confucius to give him some money. But it was unreasonable that he should be so specific as to ask Confucius to sell his carriage, not anything else. The girl takes her contemporary situation as an example to point to the illogicality of the event: if somebody wanted help from another one, he could not ask the other to sell certain things. If only he got the help he wanted (in this case: money), he would not care where it was from. To bolster her argument, she mentions another event in *The Analects* that shows that when Confucius's son Li died, Confucius also wanted to sell (according to the above interpretation) the carriage for the outer coffin. She asks why in both cases, the carriage must be sold for the outer coffins? And the outer coffin was nothing very expensive, and at most its cost just doubled the price of the inner coffin. If Yan Lu could afford the inner coffin, why could he not afford the outer coffin. She points out that in the following passage, Confucius' disciples buried Yan Yuan richly 厚葬 which meant that much money had been spent. Why did they not use the money to buy an outer coffin for Yan Yuan but deliberately asked Confucius to sell his carriage? In her opinion, the true meaning of the sentence was that Yan Lu wanted the carriage so that he could use its wood to make an outer coffin for Yan Yuan. But why should Yan Lu do so, she could explain, and has to leave it at this there (for the whole matter, see Li Ruzhen 115-6).

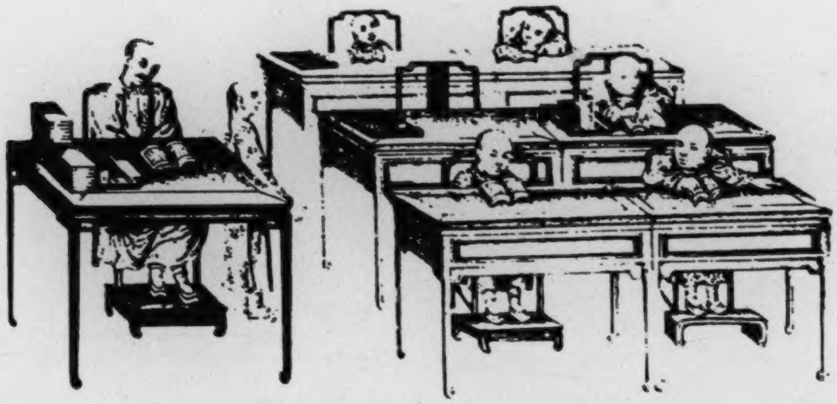
The girl's interpretation may well be acceptable and a possible answer can be: in this way, the dead was greatly honored. Anyway Li's new opinion is a good query on the validity of the traditional interpretation. From this example we can see that Li, when studying the classics, was using his own mind to find problems, and not just following other's opinions.

Duo is described as finding a book on the table in the room of the girl in purple. He picks it up and saw it was Confucius' *The Analects*. He browses it and on a page sees a note beside a sentence: 願車 馬 衣 輕 裘 與 朋 友 共. The note says that yi 衣 in the sentence should be read as the first tone 平 聲 , which means yi 衣 should be taken as a noun (meaning "clothes")here. Duo thinks that he has found a mistake made by the girl and says that yi 衣 here should be read as the last tone 去 聲 , which means yi 衣 should be taken as a verb (meaning "to wear"). The girl answers that there were four things mentioned in the sentence: carriage, horse, clothes and light furs, not just three things: carriage, horse and light furs. The speaker of the above sentence, she says, meant that he would like to share the four things with his friends. Otherwise, she explains the meaning is not clear. She explains that some people took yi 衣 as a verb (to wear the light furs) because there is a character qing 輕 before qiu 裘 [furs], which made qing qiu 輕 裘 [light furs] the only term of the four things to have two characters, while the other three were all in one character' s form. She suggests that if there had been a fei 肥 [fat] before ma 馬 [horse] to make the term of fei ma 肥 馬 [fat horse] , then the fact that there were four things mentioned in the sentence would be much clearer for fei ma 肥 馬[fat horse] could well match qing qiu 輕 裘 [light furs (for the whole matter, see Li Ruzhen 118-9)]. Duo disagrees with her at the moment, but when Tang Ao and Duo Jiugong are leaving the country, Duo accepts that the girl' s interpretation (yi 衣 in that sentence should be taken as a noun) is reasonable. He says that the book in which this yi 衣 is explained to be used as a verb should be taken as a waste. Tang answers that book is done by a famous thinker (referring to the great scholar Zhu Xi 朱 熹 in the Song dynasty [see note 2 on page 126 of Li' s novel]). Tang says that, even though Zhu Xi might have some minor mistakes like this, his interpretation of Confucius' *The Analects* is, in general, still most valuable. Actually Tang Ao's statement expressed Li's opinion.

Scholars have proven that qing 輕 [light] before qiu 裘 [furs] in the sentence was added by mistake by somebody in the Song Dynasty (qtd. in Wang Qiongling 537, note

62). This being the case, yi 衣 should definitely be taken as a noun for all the four things would all be in single character' s form: che 車 [carriage], ma 馬 [horse], yi 衣[clothes], and qiu 裘 [furs]. and once more, the fact also proves that Li's opinion was quite correct.

The knowledge of Chinese classics displayed by Li in his novel gives us an idea of how Chinese scholars did their study in old times. This knowledge of classics was an important part of the imperial examinations. At the time when imperial examinations were prevailing, a lot of scholars spent much time in the study of this knowledge. For many, their attitude toward learning was uncritical and conservative. Usually they would follow what had been said by the famous scholars and did not offer their independent opions. This was particularly true in the Qing dyansty. The following picture is an example of how the scholars were trained in their early studies.



A Chinese school in the nineteenth century. The teacher is listening to a pupil recite a classical text by heart. This test was called 'backing the book'; it had become the basis of the learning process during the Ch'ing dynasty, and reflected the uncritical and conservative attitudes prevailing among the shih.

(Cotterell and Morgan 263)

Li, in his novel, expressed some independent opinions and this attitude is valuable against his social background. In the long history of China, many outstanding thinkers appeared and produced great ideas. Li was not counted as a great thinker, but his attitude toward study is praiseworthy. By displaying his knowledge in the classics, Li meant to teach some knowledge and the right way to study this field.

VI. Games

In *Flowers in the Mirror*, Li also displayed a rich knowledge in various games, which is one of the reasons readers find his novel interesting. Games are very much a part of Chinese culture. The Chinese are known for having invented many kinds of games for entertainment, recreation and brain teasing. *Flowers in the Mirror* makes many allegories to game and gamesmanship. It is admirable that Li could touch upon so many games all by his own. We shall now survey a few of these.

Lantern riddles 燈謎

It is a traditional Chinese game to write riddles on lanterns and ask visitors to guess their meaning. If the visitors hits upon the correct answers, he is to be awarded with some prize. In novels, the quality of these riddles often displays the author's talent and knowledge.

In Chapters 31-32 of the novel, Tang Ao and his companions come to Wise Man Country and happen to enter a club of lantern riddles. Tang is shown to read a riddle like this: 分明眼底人千裏 (Li Ruzhen 225) and the answer requires the name of a country. The meaning of the riddle is: It is as close as at the bottom of one's eyes, but the person is one thousand *Li* (one *Li* equals 500 meters) away. Tang guesses the answer should be Shenmuguo 深目國 (Deep-eye Country, a fictional country in the novel) and he is informed that he has done right. The bystanders appraise that this riddle is well composed to exaggerate that the eyes of the inhabitants in Deep-eye Country were as deep as one thousand *Li.* The merchant Lin Zhiyang, Tang's brother in law, is shown as finding the key to another riddle as qianjinzhizi 千金之子 [son of a thousand taels of gold]. In Chinese, qianjin 千 金 [a thousand taels of gold] is a term often used to refer to the daughter of another family, so Lin got the key as Women' s Country 女 兒 國（ a fictional country in the novel [Li Ruzhen 225]).

In Chapter 78, a lady Zhang Hongzhu works out a riddle 無 人 不 道 看 花 回， requring a sentence in Confucius' *Analects*. The meaning of the riddle is: nobody is not saying that he is back after viewing flowers. Finally Xiaochun announces that she has got the answer: 言 游 過 矣, which is a sentence from *Book XIX* of *Analects*. In *Analects*, Yan You 言 游 is the name of a man and guo 過 means mistaken, while yi 矣 is only an interjection without real meaning. The speaker means that "Yan You is wholly mistaken" (trans. Arthur Waley 226). But if not taken as the name of a man, yan 言 means "talk" and you 游 means "travel." Guo 過 can be a function word showing the completion of an action. Thus the sentence can be understood as "speak that they have traveled" which is in concordance with Xiaochun's answer.

In Chapter 80, the talented girls make up a lot more riddles. Situ Wu' er, after hitting upon the key to a riddle made by another girl, produces one like this: xinditantian 席 地 談 天, meaning one sits on the mat that covers the ground and talk about heavens, requiring a sentence from *Mencius*. It is guessed right by Yunzhi as weibei er yangao 位 卑 而 言 高 meaning an official of very low rank talks about important affairs that are the concerns of the high rank officials. There are many more riddles in the novel. From the above mentioned examples we can see the wit and knowledge Li used in making them. In China, riddles have had a history of over three thousand five hundred years (see Li Jingxin 3). People like riddles because they have the function of entertaining while teasing the brain. Many riddles require players to have necessary knowledge and they help improve man' s wisdom. In Li' s novel, riddles are shown to be an important part of Chinese culture, and the reader can get some idea about this game in China.

Dou-bai-cao 門 百 草 (Competition of the plant names)

This is a traditional Chinese game which can be traced to ancient times. In spring, people go out to walk on wild fields. They pick up various kinds of plants in the field and compete with the names. There is an element of literature in it because when one gives the name of one plant, the other should give a name that matches it well in meaning, number of Chinese characters, parallelism, etc. (see Wang Qiongling 479-80).

In Chapter 77 of Li' s novel, the ladies come to a garden where one hundred kinds of herbs are grown. They refrain themselves from picking up plants because the herbs in the garden are expensive.

A lady Zizhi, pointing to a kind of flower in the corner, starts the game by giving the name of Chang Chun 長春. The meaning of the two characters in the name is long spring. Then Chunhui gives the name of a plant to match it: Ban Xia 半夏，meaning half summer. In this example, ban半 (half) matches chang 長 (long) well in that both refer to the length of time; while chun 春(spring) matches xia 夏(summer) well in that both are the names of seasons. Chunhui then gives the alias name of Chang Chun as Jing Zhan Cao 金盞草 meaning Golden Cup Grass. Ye Fangchun matches it with Yu Zhan Hua 玉簪花 meaning Jade Hairpin Flower. We can see how well these two terms match each other. Dou Gengyan points to a tall tree and gives Guanyin Willow 觀音柳 (Guanyin is Bodhisattva, a female), then Ye Fangchun, referring to a miniature tree in a pot, matches it with Luohan Pine 羅漢松 (Luohan is arhat, a male). The spectators all consider this to be a marvelous match (Li Ruzhen 566). Another example is worthy mentioning here. A lady Yi Ziling offers an alias name of rose as Li Niang Cao 離娘草 meaning the grass of someone leaving one' s mother, and Xiuying answers with the alias name of orchid as Dai Nü Hua 待女花, meaning the flower of someone waiting for one's daughter.

The ladies went on and on with the game, and scores of good matches appear one after another, which really cause some admiration from the reader for the wit the author put into them. Dou-bai-cao is only a kind of game, but from it we can see how strongly the Chinese people like their culture. The players not only need to know many names of the plants, they also have to have good sense of literature (this antithesis is a part of Chinese literature, many famous Chinese poems and *ci* 詞 are wellknown for the antithesis used in them; for instance, a couplet from Wang Bo 王勃's 藤王閣序 [Preface to a Poem Written for Teng Wang Ge] includes very skillful use of antithesis and reads as: 落霞與孤鶩齊飛，秋水共長天一色 (Setting clouds fly with a lonely goose, and autumn water shares the color with the vast sky [my translation]). This couplet is so famous that it can be recited from memory by many many people.

Madiao 馬吊

Hu Shi mentions in his "漫游的感想" (Reflections in Travel) that the game *Madiao* 馬吊 was very popular at the end of the Ming dynasty. It is the predecessor of Mahjong. According to Hu Shi, it' s a kind of poker game with forty cards. Each card is printed a Robin Hood styled heroic figure from the popular novel Water Margin 水滸 (see Hu Shi *Collected Works*, vol.3, 37), but today' s Mahjong does not have these heroic figures on its cards. According to Wang Qiongling, today we do not know exactly the rules of playing Madiao (Wang Qionglin 508).

In Chapter 73 of *Flowers in the Mirror*, a lady Zizhi comes to a pavilion where four girls are ready to play *Madiao* and three girls are watching. Zhang Lanying asks whether they should play *Madiao* in ancient way or contemporary way. She explains that the ancient way has more minor rules and, thus, is more complex. Zizhi talks about into detail one of the methods of playing *Madiao* which was called 鯽魚背 (*Jiyubei*, the back of crucian carp).

> 宰玉蟾道："正是，妹子聞得'鯽魚背'有個譜兒，不知各家是怎樣几張？"紫芝道："我記得莊家是紅萬、九十、六萬、六索，餘皆十子、餅子；四八之家，百子、九餅、一萬、一索、三萬、三子、三索、七萬、七索；么五九家，九萬、九索、五萬、五索，餘皆十字；二六之家，一張空堂、四張餅子、三張十字、二索當面、四肩在底。二六之家，觀賞門十，莊家立紅，九十加捉；四八之家，以百子打椿，或發三萬，或發三索；大家照常門去，那就上了。" [Li Ruzhen 539. This is the introduction of a method called *Jiyubei* to play Madiao. Even for today's native Chinese speakers, the meaning of some special terms is not clear (see Wang Qiongling 508). Generally, it defines the cards each side is supposed to hold and how each side is supposed to play.]

Wang Qiongling takes it as the only detailed written record of playing *Madiao* and quite valuable in the study of folklore (Wang Qiongling 508). In the novel, a girl named Lanyan explains to other girls that when playing *Madiao*, much concentration is required. She says that "when *Madiao* was first created, careless people or those lacking in concentration were not allowed to watch... otherwise, they would have destroyed the beauty of the game" (Stephen J. Roddy's translation [qtd. in Roddy 203]).

It is interesting to note that the game *Madiao* has been blamed for the fall of a dynasty. Hu Shi points out that at the end of the Ming dynasty, *Madiao* was such a popular game that literati and officialdom indulged so much in it and forgot to mind their business and the whole government became inefficient. After the fall of the Ming dynasty, a scholar named Wu Meicun 吴梅村 blamed Madiao as the cause of the fall of the dynasty (see Hu Shi *Collected Works*, vol3, 37).

By the description of the game of Madiao, Li Ruzhen displayed his knowledge of it; at the same time he presented a part of the rich Chinese culture to the reader. His novel is benefited by this description for it enriches its content and makes it more charming. Li might not have expected that his description of Madiao should become the only detailed written record of the game and supplies valuable resources to folklore researchers.

Archery 射藝

For military officers, archery is a kind of martial art to attack enemy and hunt, but for the literati, it is a game to take for entertainment and good health.

In Chapter 9 of *Flowers in the Mirror*, three girls, Zizhi, Yuchan and Fengchu, are shown to be practicing archery. Zizhi shoots three arrows and each hits the target. Zizhi then asks Yalan, a lady who has some good knowledge in archery, why she has pains in her arm and accelerated heart beats after the shoot, which are not supposed to be the case. Yalan answers that when she was learning the skill of archery, she made a poem to sum up her knowledge in archery which had been much approved by her father who has many years experience in archery. The meaning of Yalan' s poem is: When practicing archery, the most important thing is to have measured gesture and mental concentration. The shooter should keep legs apart, take a deep breath and have ease in breast. His two shoulders, two elbows and forehead should keep even. The end of the arrow should keep close to the shooter' s mouth, the string should be close to his body and his ears should keep alert to the sound. The shooter should keep his feet firm on the ground. When he draws open the string he should be composed and elegant, when he lets go the arrow, he should be calm and unhurried. He should keep the hand which holds the arrow in a fist with a full hollow in it. Only in this way he could do a good practice of archery (Li Ruzhen 581-2). She then explains in detail that because Zizhi did not observe these rules, she does not feel well after her shooting. Yalan also argues against the common idea that, when shooting, one has to support the bow with the left palm as if holding Mount Tai 左手如托泰山. Yalan explains that if the shooter holds the bow in this way, his hand must be in a curve and his elbow and shoulder can not keep even and the correct way of archery will be ruined. She suggests that one just needs to hold the bow tightly 攥. By following the rules in her poem, the shooter will be able to improve gradually his art to perfection. A girl argues that if only the shooter could shoot the target, why should he worry about gestures. Yalan answers that if a shooter does not pay attention to the correct way of archery, he will get damage instead of recreation and better health (Li Ruzhen 583).

Archery has a long history in China. As early as in the Zhou dynasty (c.1028-257 B.C.), some official was assigned the duty to teach archery as one of the six skills 六藝 to the boys in the royal family (see *Encounter of Chinese Words* 辭海 342). In *Flowers in the Mirror*, Li Ruzhen hoped to bring better health to people by introducing the correct way of archery practice.

The rich knowledge in various games displayed by Li Ruzhen serves both the functions of teaching and pleasing. Li meant to teach in the form of entertainment. A reader does obtain much enjoyment in reading these games, and at the same time he learns something that can benefit his brain or his body.

Conclusion

In this all-embracing novel, the author Li Ruzhen displayed good knowledge in many fields. To help people and improve the world with his knowledge is an important motivation in his heart to write this novel. He hoped to cause reform in the society, which we can see in his descriptions of the Country of Gentlemen and the discussion of women' s problems. He hoped to bring better education to people, which we can see in his introduction of phonology and scientific knowledge. He also hoped to bring better entertainment and health to people, which we can see in his descriptions of various games. Li Ruzhen wrote the novel in very poor financial situation, but he always had his poeple in his heart. He was an intellectual with gold heart. *Flowers in the Mirror* is outstanding among the scholarly novels of his time[1]. In the four scholarly novels that appeared in the Qing dynasty, Li' s was taken as the top one (see Wang Qiongling 600) though it was critisized by some scholars as over-displaying knowledge (see 119-122 of this thesis). *Flowers in the Mirror* is not regarded as a first-rate literary work as *A Dream of Red Mansions* 紅樓夢, *The Romance of the Three Kingdoms* 三國演義， *Water Margin* 水滸， and *Pilgrimage to the West* 西遊記， yet it keeps an important position in its own style in Chinese literature.

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[1] Wang Qiongling takes the scholarly novels as a special phenomenon in literature of Qing dynasty and discussed four novels of this school (*Ye-sou-pu-yan* 野叟曝言， *Yin-shi* 蟫史, *Yan-shan-wai-shi* 燕山外史, *Jing-hua-yuan (Flowers in the Mirror)* 鏡花緣 into detail in her *Four Scholarly Novels in the Qing Dynasty* 清代四大才學小說. The works of this school can not match the first rate Chinese novels mentioned afterwards. Lu Xun 魯迅 also admitted its merit as containing "much that is graceful and charming " while pointing out "it is a convergence of knowledge and a store of arts...quite close to a practical encyclopedia."(see 5, this thesis)

Chapter Three: Jonathan Swift and *Gulliver's Travels*

Swift's life

Commenting on Jonathan Swift' s life, James Hay writes: "SWIFT, born in poverty, educated on charity, by force of genius stepped forward to be the companion of kings, the leader of men, the guider of nations, and the instructor of mankind" (Hay 350). James Hay' s adulation contrasts sharply with Swift' s own epitaph: "Here lies Jonathan Swift where savage indignation can no longer lacerate his heart" (Starkman 4). Yes, from the eyes of critics, Swift had achieved a lot of which he should be proud, but for himself, a career full of frustrations had caused much resentment and anger in him.

Swift' s biography is too well known to repeat here. We shall, however, bring out some salient points to show the impact on *Gulliver' s Travels* and help us compare this work with Li' s *Flowers in the Mirror*. Most scholars agree that frustration and resentment are at the very bottom of Swift' s writings. As Miriam Starkman states in "Introduction to *Swift: Gulliver' s Travels and Other Writings*," "he was repeatedly frustrated in his hopes. In his end Swift was as unfortunate as in his beginning" (7). Starkman also points out that "His anger is everywhere apparent, and his life provided him with more than ample justification for anger"(3). Harold Bloom' s words very vividly describe the resentment that could have been nursed in Swift' s heart: "Swift reechoes the perplexed anguish of the Psalmist: how long, O God? Why does God forget his servant, hide in the seasons of distress? Why do the good fail, the wicked flourish? Why is the genius doomed to die like a poisoned rat in a Dublin hole while mediocrities monopolize power?" (Bloom 165) Yet, it was political frustration that fueled his impetus to write and re-examine the means of his own world through Gulliver's eyes.

Jonathan Swift was born in Dublin in 1667 and died in 1745. The first misfortune that befell him was his father' s death, even before he was born. "He was fatherless from the beginning of his life, and motherless for some of the most crucial years of his life" (Starkman 5) and without the concern and help from his father, he had to work harder than others to reach the same position as others. He was educated at Kilkenny Grammar School, and later entered Trinity College, Dublin where he was often censured for offenses against discipline. He was poor in terms of money yet haughty in spirit; melancholy and fretful. He was an indifferent student, yet, according to Hay, intellectually the greatest of the College (see Hay 7). After leaving Trinity College, he had several ups and downs in his career. In 1689 he went to England and became secretary to Sir W. Temple. Here he had to live under another' s roof and taste the bitterness of the loss of his father. He hoped to enter political life to give full play to his talents. But Temple' s delay in giving him preferment made him despair of ever entering political life in England. He returned to Ireland in 1694 and "was ordained and received the small prebend of Kilroot" (Harvey 759). Yet in 1696 he returned to Temple' s Moor Park. In this period, Swift hoped to build up "a career through political preferment" (Starkman 5), but with Temple' s death in 1699, his hope was broken and he had to begin a new career from that time on at the relatively advanced age of thirty-two. Swift went back to Ireland again. Since then, he sometimes stayed in Ireland and sometimes in England. He became involved in politics and church affairs. He worked for the Whigs as a pamphleteer for twelve years and then became a Tory journalist (Starkman 7). His articles became more and more influential and contributed greatly to the cause of the party, either the Whig or the Tory. He achieved much for his party, but he never received worthy reward. Even though he did a lot for the Whigs, the Whigs did not take him as a whole Whig. The "Whig leaders had rewarded him only with good words, and had bestowed their good things on followers more wholly their own" (Hay 71). In 1710 when Swift left Ireland for England, "Lord Treasurer Godolphin received him with stiff coldness, which so enraged him that he left the house almost vowing vengeance" (Hay 74). But he met the same fate with the Tories. He helped the Tory premier Harley gain favor again in 1711 (see Hay 88), and Hay comments that "Truly the Ministry did little for Swift, although he did so much for them" (89). Later, Swift became indispensable to the Tory Ministry. He showed great ability in dealing with political affairs. At the time England was at war with France, and Swift saw clearly that Harley' s government could only survive by making peace with this country. Hay points out that "There was only one man in Europe at that moment that could do it, and that man was Swift" (100). He was in fact at the time "a Tory chief; a Cabinet Minister without a portfolio; their ablest and most powerful defender" (Hay 93). He became so important that *The Times* writes: "Under the Harley Administration, Swift reigned; Swift was the government; Swift was Queen, Lords, and Commons. There was tremendous work to do, and Swift himself did it all" (qtd. in Hay 100). For all this, what did he get for a reward from the ministry? "They had given him nothing but promises, Royal levees, and Cabinet dinner" (Hay 102). Even though he became dean of St. Patrick' s in 1713, the dream of his life to become a bishop ended in vain. After Queen Anne' s death in 1714, Swift' s party was no longer favored by the monarch and his ambitions were even more hindered; yet, this political career, with all its frustrations, gave him an intimate knowledge of his world. He resided in Dublin for twelve years before he revisited England and wrote on behalf of the Irish people. It was mainly during this time that he wrote the famous *Gulliver's Travels* (According to Eherenpreis, D. Nichol Smith proved that Swift wrote *Glulliver's Travels* in about 1721-5 and continued to revise it probably until its publication in 1726 [Eherenpreis 200]).

A few words about *Gulliver's Travels*

Gulliver's Travels is a classic of Western literature. Since its publication, it has attracted many readers. It is a book which describes the experience of Gulliver when he travels in several countries. There are four parts in the book. Part I (consists of 8 chapters) relates his voyage to Lilliput, Part II (8 chapters) his voyage to Brobdingnag, Part III (11 chapters) his voyage to Laputa, Balnibarbi, Luggnagg, Glubbdubdrib and Japan, Part IV(12 chapters) his voyage to the country of the Houyhnhnms. This book is well accepted as a satire in the form of travel writing. In this work, Swift satirizes man in a multi-facet way and took many things in this world as his targets. In the conversation made between Gulliver and the king of Brobdingnag, the king observes that: "But, by what I have gathered from your own Relation, and the Answers I have with much Pains wringed and extorted from you: I cannot but conclude the Bulk of your Natives, to be the most pernicious Race of little odious Vermin that Nature ever suffered to crawl upon the Surface of the Earth" (Swift 122). No wonder W. B. Carnochan states that "Swift had written, apparently, a 'satire on man'"(55).

Gulliver's Travels is also popular in China. Toward the end of the Qing dynasty-the last dynasty in China-communication and connection between China and the Western countries became more often. Along with the traders, some priests brought modern knowledge in science, politics and literature into China. Some Chinese students were sent by the government to Europe and America. At this time, for the first time in history, Western literature was introduced into China on a large scale. *Gulliver's Travels* was among the first to be introduced to the Chinese readers. It appeared in the translation works done by a very well-known translator named Lin Shu 林 纾 (1852-1924) who translated many Western literary works into Chinese in most impossible way. [1] Among Lin's translation works many are masterpieces as those by Shakespeare and other noted writers, and his written style of Chinese is well appreciated by the Chinese readers, so his translation works became very popular at the time. His translation of *Gulliver's Travels* includes only the first part and the second part of it and he named it with a Chinese title *Hai-wai-xuan-qu-lu* 海 外 軒 渠 録 meaning laughable stories in foreign countries. Later on, different Chinese versions of *Gulliver's Travels* became available including complete translation.

In China, the most influential parts of *Gulliver's Travels* are the first and the second, namely, Gulliver's experiences in Lilliput and Brobdingnag. Many Chinese readers have been attracted by the stories of Gulliver in the small-man country (Lilliput) and big-man country (Brobdingnag). In the first chapter of this thesis, I introduced the idea of two functions of literature: one is to please, the other is to teach. Swift' s novel, in a great degree, please the reader by these funny, exotic episodes Gulliver experienced in those fictional foreign countries. When one reads the vivid descriptions of Gulliver in Lilliput and Brobdingang and other countries, as the hero puts an array of mounted soldiers on his handkerchief in Lilliput and rows a boat in a "Cistern full of Water" (Swift 110) in Brobdingnag, he is really entertained. But, *Gulliver's Travels* also fulfil the function of teaching, for the author made use of knowledge in various fields to teach the reader his ideas about the human beings. He made satire on many aspects of this world, and presented to the reader what he thought a better society.

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[1] Lin Shu started to translate in 1899 and stopped in 1919. He himself did not know any foreign languages, but he wrote beautiful Chinese in traditional style. He translated with the help of those who knew one or more foreign language(s). He wrote in Chinese while the interpretor was telling him the meaning of the novel or play. Some scholars remark that his translation could hardly be "translation" but only "retelling"

In China, *Gulliver's Travels* is often linked by readers to *Flowers in the Mirror* by Li Ruzhen, because both are travel stories (in Li' s novel, the first part is about Tang Ao and his companions' travels in some half-imagined, half-legendary countries). Both authors chose to discuss their own world by making characters in their works as travelers in fictional countries, i.e. to make them strangers first and then let them see and make comments on their own worlds. The difference is that in *Gulliver's Travels* a first person (Gulliver) narrative is employed and in *Flowers in the Mirror* it is a third person (story-teller) narrative. Some comparative studies have been done by scholars (see the summary made by Liu Jiemin and quoted in Chapter One of this thesis). In this thesis we shall do a comparative study from a new point of view—knowledge and its functions in literature. We shall begin by discussing knowledge in politics and history, in language, in classics, in physics, in astonomy and geography displayed or employed by Swift in *Gulliver's Travels* and try to analyze their functions.[1]

The forms of knowledge in *Gulliver's Travels*

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the story; yet other scholars stick to the opinion that his translation works are good translation. Anyway, this problem is beyond the limitation of this thesis.

[1] I take *The Annotated* Gullier' s Travels edited by Isaac Asimov and published by Clarkson N. Potter, Inc. in New York in 1980 as my resource as I think this is a very reliable and complete version (the parts that did not appear in the earlier editions for fear of offense to the royal are included in this version). When I quote from Swift' s text, I will note as Swift and page number(s); when I quote from Asimov' s notes, I will mark Asimov and page number(s).

I. Politics and history

Gulliver's Travels is well-known for its political satire and this satire can only be based on Swift' s excellent knowledge of politics and history. Swift himself had been at the center of political life and consequently accumulated considerable political experience. He also read widely in history and achieved marvelous insight in understanding politics and history. As F. P. Lock points out, "Where *Gulliver's Travels* is unique in Swift' s writings is in the range of its historical reference. Swift drew largely on the whole of his reading and knowledge of history, ancient and modern" (35).

In Swift' s time, most countries in the world were ruled by monarchs who had the supreme power in the administration and management of their countries. They were the most important part of contemporary politics. Swift, based on his personal experiences and deep understanding of European politics, made use of fictional form to make comments on the political life of his world. Definitely, *Gulliver's Travels* contains a strong critique of the monarch. Except the emperors of Blefuscu and Japan whose roles are roughly functional (according to Lock), Swift depicted monarchs of four types, "ranging from the most absolute to the relatively limited"(Lock 128).

The most tyrannical monarch is the king of Luggnagg. His court reminds the reader of "seventeenth-century travelers' accounts of oriental kingdoms" (Lock 128). This king regards himself so high and humiliated his subjects to extremity. Everyone who needs to see him must "lick the Dust before his Footstock"(Swift 194). And this is a "peculiar Grace, not allowed to any but Persons of the highest Rank" (Swift 194). The meanness of such monarch is also displayed by his using poison on the floor. In this way he could easily put to death anyone at his will.

The second type is represented by the king of Lilliput. If the "King of Luggnagg is a parody of oriental kingship rather than a serious critique of European despotism" (Lock 128-9), this king is definitely used by Swift to make a serious critique of European kingship. He enjoys a long tittle which is more extravagant than that of the kings in Europe. He is so ambitious that he hopes to put his neighbor country Blefuscu into a province under his rule so that he could be the only monarch under the sun. He is so greedy that after Gulliver pulled the whole fleet of Blefuscu over to his coast, he desires him to bring "all the rest of his Enemy's ships into his Ports" (Swift 45). He is also a master of schemes and politics and so ungrateful. When Gulliver refuses his demand to capture all the fleet of Blefuscu, he intrigues to put him to death. Swift (he himself was sometimes a sufferer of the shifting favor of the monarch between factions) believed a king is supposed to be the father of the whole country and above faction as embodied by the king of Brobdingnag (see Lock 132), but this king of Lilliput makes himself the head of a faction. He suppresses the Big-Endians and forces many of them to flee his country. One of his purposes to conquer Blefuscu is to destroy those Big-Endians who fled to that country. In this king, so many bad characters of the European kingship are embodies that Lock concludes "the Emperor of Lilliput represents...the vices and failings of a whole class of arbitrary monarchs"(130). By creating this king in *Gulliver's Travels*, Swift whipped the dark side of European monarchs.

The king of Laputa belongs to the third type. He, like his courtiers, is so much indulged in the intense speculative preoccupations as mathematics and music. When Gulliver enters his palace, even though Gulliver and the crowd around him make "sufficient Noise" (Swift 148), the king "took not the least Notice of us," for "he was then deep in a Problem" (Swift 148) and Gulliver and the crowd have to wait at least an hour. The king of Laputa is a reflection of those princes who were so occupied in their interests that they neglected their duties in governing. Lock pinpoints two examples of this type: "among examples of princes whose intellectual interests caused them to neglect the business of government would be the emperor Rudolf II and the Elector of Cologne. the elector's particular interest was chemistry" (131). For this kind of princes, Swift did not reproach so much as he did those of the first and second types and Lock is right in thinking that "the King of Laputa may also be intended to satirize, in a good nature way, the rather formidable mathematical training that Plato prescribes for his ruling elite in Book VII of the *Republic*" (131).

The king of Brobdingnag belongs to the fourth type and represents Swift's ideal of kingship based on a Renaissance ideal, a "Prince possessed of every Quality which procures Veneration, Love and Esteem; of strong Parts, great wisdom and profound Learning; endued with admirable Talents for Government and almost adored by his

Subjects" (Swift 125). Quite opposite to the king of Lilliput, in Gulliver' s eye, the king of Brobdingnag is a lover of peace. He "was struck with Horror at the Description I had given of those terrible Engines, and the Proposal I had made (i.e. to destroy those cities or towns who "should pretend to dispute his absolute Commands" [quoted from the same page]) " (Swift, 124). Saying that "He would rather lose Half his Kingdom than be privy to such a Secret," this king rejects Gulliver' s offer of the secret of his terrible powder with which he could unify the world (Swift 124).

Intrigue is another vice in the monarch that Swift hated, but the king of Brobdingnag is above this for he believes in the politics of common sense, and according to Gulliver, "He professed both to abominate and despise all *Mystery*, *Refinement*, and *Intrigue*, either in a Prince or a Minister. He could not tell what I meant by *Secrets of State*, where an Enemy or some Rival Nation were not in the case" (Swift 125).

In Swift' s idea, it is admirable for a king to be a good family man. The king of Brobdingnag is described as such a man. He takes part in the weekly family dinner and joins his family members in their interest and amazement in Gulliver, an example of the "impotent and groveling an Insect" (Swift 124) who caused so many happiness in the royal family.

As discussed in the paragraph about the king of Lilliput, the incarnation of bad kingship, Swift criticized the king as not being the father of the whole country but the head of a faction. Here, in Brobdingnag we see the king "is above faction, and above personal ambition" (Lock 132). He is impartial and does not side with any one faction.

Among the four types of kinghships, the king of Brobdingnag is the most ideal one, and this is a conclusion supported by Lock' s statement: "His rule illustrates the felicity that might follow from the conjunction of ' political power and philosophical intelligence' that Plato imagined in the *Republic*" (132).

In *Gulliver's Travels*. Swift did not limit his comments to monarchs; he also concerned himself with other events and people. In the form of satire, Swift aimed to teach reader the his view of political life and history.

The dispute in Lilliput between the Big-Endians and the Small-Endians represents one such instance. By having two factions quarrel over some trifling matter (which end of the egg to break), Swift put forward his opinion of the contemporary religious quarrels. The Big-Endians were the Roman Catholics and the Small-Endians were the Protestants. Reader can find that the great-grand father of the king of Lilliput refers to Henry VIII; the son refers to Elizabeth, declared by the Pope as illegitimate. The edict in which the great-grand father ordered every subject to break eggs at the small end is an analogy of Henry' s proclamation of himself as head of the national church.[1] In Swift' s eye, the religious quarrels between the roman Catholics and the Protestants which caused so many wars and cost so many lives were really some quarrels over unworthy matters!

Furthermore, in the political life of Lilliput, there are the High-Heels and the Low-Heels. The former exceed the latter in number but the latter are in power for they gained the favor of the emperor. As pointed out by many commentators, the High-Heels were the Tories and the Low-Heels were the Whigs. The party system in Lilliput is a simplified imitation of the contemporary English party system.

The event of Gulliver' s putting down the fire in the royal palace is understood by Case to be Swift' s defense of the Tories' illegal negotiation of the peace with France (see Case 75). The negotiation helped England out of the emergent crisis, but it was "technically illegal" (Case 75). Oxford saved the state but was blamed for his "incidental illegalities and indecencies" (Case 76) and was dispensed by Queen Anne, just as Gulliver saves the palace from the fire but causes great resentment from the Empress of Lilliput who "removed to the most distant Side of the Court, firmly resolved that those Buildings should never be repaired for her Use; and in the Presence of her chief Confidents, could not forbear vowing Revenge" (Swift 49).

In Part Three of *Gulliver's Travels*, the flying island Laputa and the country of Balnibarbi reflect the relationship of England and Ireland. The flying island hovering over Balnibarbi embodies the power and influence of England over Ireland. The revolt of Lindalino (represents Dublin) shows the resentment and anger of the Irish people against England.

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[1] See Case 74.

In *Gulliver's Travels*, Swift also displayed his idea of good politics and government through the narration of two countries. The first one is Brobdingnag, the good country of human beings. The king in this country is open-minded. He is shown to be a lover of peace and above political intrigues. He prefers simple laws and his army consists of volunteers. By contrast, however, the second one, Houyhnhnmsland, is his ideal country. This is a country of reason where everything is organized in a reasonable manner. In this country, there is no monarch and the supreme administration institute is the Representative Council of the Whole Nation. It is clear that Swift was expressing his anti-monarchic sentiments. Yes, Brobdingnag is a good country, but it is still a country of yahoos, and Gulliver has never expresses that he hopes to live in this country for ever and never shows such strong feelings as he does to the inhabitants of Houyhnhnmsland. Gulliver hopes so much to become a part of this country for ever but his hope fails at the end. Even after he returns to his homeland, his "Memory and Imaginations were perpetually filled with the Virtues and Ideas of those exalted *Houyhnhnms*" (Swift 279); he can not bear the closeness of human beings including his wife and children and preferred to stay in the stable with the horses.

Swift' s critique of contemporary politics is severe. The kings "did never once prefer any Person of Merit, unless by Mistake or Treachery of some Minister in whom they confided...the Royal Throne could not be supported without Corruption" (Swift 190). Gulliver discovered that many great events had unspeakable causes: "How a Whore can govern the Backstairs, the Back-stairs a Council, and the Council a Senate" (Swift 190). In the Grand Academy of Lagado, a professor showed Gulliver "a large Paper of Instructions for discovering Plots and Conspiracies against the Government"(Swift 179) which included a series of ridiculous methods ranging from watching the excrement of the suspected persons to deciphering of words, syllables and letters at will (Swift 180). Gulliver told that professor that in his country "the Bulk of the People consisted wholly of Discoverers, Witnesses, Informers, Accusers, Prosecutors, Evidences, Swearers" (Swift 180). This is Swift's view of the contemporary English political situation!

In *Gulliver's Travels*, Swift also offered his opinion on certain historical events. For instance, he countered the idea held by some scholars that Alexander the Great had been poisoned by having Alexander the Great himself tell Gulliver "that he was not poisoned, but dyed of a Fever by excessive Drinking" (Swift 184).

According to Lock, Swift had been interested in the cause of the death of Alexander the Great since at least 1712 (see Lock 146). In this year he wrote to Stella in a letter: "I came home early, and have read 200 Pages of Arrian, Alexdr[1] the great is just dead; I do not think he was poisoned. Betwixt you and me all those are but idle Storyes, tis certain that neither Ptolemy nor Aristobulus thought so, and they were both with him when they [slip for he] died. Tis a Pity we have not their Historyes" (qtd. in Lock 147). From this letter we can see that Swift reasoned by referring to Ptolemy and Aritobulus that Alexander could not have been poisoned to death as depicted by such scholars as Arrian and he thought that it was such an important idea that he put it in his *Gulliver's Travels* to make his opinion public.

Swift made use of his knowledge in political life and history to achieve the most important function of his novel, that is to say making a satire of the European politics and teaching his reader to learn the nature of this. He first made Gulliver, the narrator of his novel, located out of Europe by making him travel in fictional countries and linking what he saw and experienced with the situations in Europe in an analogic way. We need to note that Li Ruzhen in the first part of his *Flowers in the Mirror* employed a similar method, i.e. he made his characters travel and discuss with the local inhabitants the situations in their own country— China. Both Swift and Li hoped to cause some social reform because they thought their comtemporary society had too many problems. Swift offered two countries which he thought good. The first is Brobdingnag, where people have a good king. Maybe he thought this was the best thing that could be achieved in this world. But he also offered his ideal country— the Houyhnhnmsland. Maybe he thought that such a land was too good to be reached by human beings so he made it a country of horses. Was he implying that such a country was impossible to appear in the world of human beings?

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[1] Swift used this to mean Alexander.

It is also worth pointing out that both Li Ruzhen and Swift made use of their novels to express their own opinion of some scholarly research. In Li's case, he offered his unique understanding of certain words in Chinese classics; in Swift's case, he expressed his own opinion about a historical event: the death of Alexander the Great.

II. Language

Swift was certainly a master of language. Not unlike Li, Swift was highly conscious of the effectiveness of language. One of the reasons that his political essays have achieved such great influence and impetus is his skillful use of the English language. He had given a definition to style, i.e. "Proper Words in proper Places" which is well accepted as a summary of his theory of language (see Kelly 2). Kelly remarks that "Swift's concern with language was at the center of his life and work" (2) and Clark also comments that "In spite of his protestations of modesty, Lemuel Gulliver manages to tell us that he was a pretty fair linguist" (2). Gulliver is not necessarily Swift, but Swift must first be a "pretty fair linguist" to make the hero in *Gulliver's Travels* to be a "pretty fair linguist."

In *Gulliver's Travels*, Swift displayed his excellent knowledge of language. In this book, the hero, in his four voyages, travels in several countries. Swift worked out different languages for different countries. Just like the situation in the actual world, in this fictional work of *Gulliver's Travels*, each country has its own language (but created by the author). In this novel, other than stating that all the languages are translated into English without mentioning their own forms, the author took pain to give his reader a concrete idea of these particular languages by supplying many examples of the certain language. Actually he created these languages (see Clark 2). To achieve this, an excellent knowledge of language is required. Swift succeeded in creating those languages used by the inhabitants in the countries Gulliver visits and by doing so the author added to the enjoyment a reader experiences when reading this book.

In "creating" these languages, Swift used a method based on phonetic codes. As Clark notes, "Swift's code is phonetic, based on nuances of sound, shadings that are inaccurately at best represented by the letters of the alphabet"(3). The basis of his play of words is "the substitution of one letter or digraph for another, especially of consonants"(Clark 4). This is the most outstanding character of Swift' s "little language" which refers to the language Swift used to write to his dearest friend Stella (see Clark 2). Swift employed this method with more freedom to work out those words used by the inhabitants in the countries of *Gulliver's Travels*. These words are foreign and unfamiliar in appearance "as Gulliver' s locales demand" (Clark 4). For example, when Gulliver is tied on the beach of Lilliput, a stage is erected beside him. A person of quality "cryed out three times *Langro Dehul san*" before he makes a long speech, then some inhabitants come and cut the strings that fasten the left side of Gulliver' s head so that he can turn it to observe the person. According to Clark, this sentence should be understood as "Run from the wild man!" (11). He states that "*Langro* works out to *Run from* nicely, the nasal *m* in *from* being anticipated by the *n* in the first syllable, the vowel sounds being the same. *Dehul* is complicated by the possibility that it means *devil*... in that event *Run from* (the) *devil man!* might be acceptable"(11).

In Brobdingnag, Gulliver is given a name by the nine-year daughter of the farmer in their language as *Grildrig*. Gulliver explains that it means *Mannikin* in English. Yet in Clark' s "Dictionary," it is based on the sound of "Girl-thing," for "Gulliver must have felt and looked like a doll, the most obvious of girl-things, in the arms of that possessive but well-intentioned girl, Glumdalclitch"(20), while *Glumdalclitch* itself is "Grimdolclutch": "clutch doll grim(ly)"(20). What a vivid picture of a little girl!

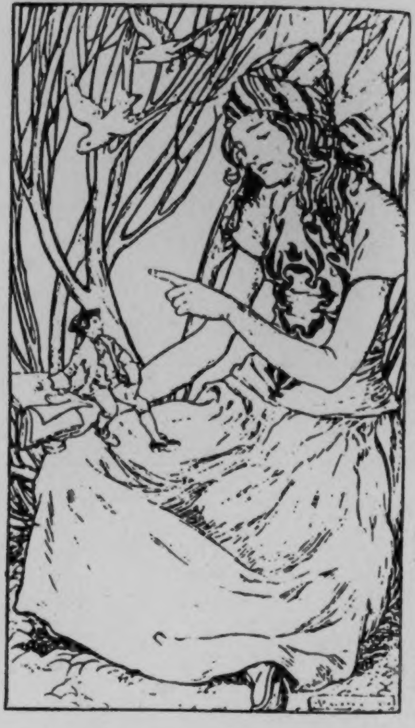
The language of the Houyhnhnms is different from the languages of other countries for it is a language of horses. In creating the words of this language, Swift displayed his genius in language. He made use of the neighing or whinny a horse makes and put meaning in them. The Houyhnhnms has an alphabet of only fifteen letters, in which H and N are used far oftener than the others, for those two sounds are closer to the neighing or whinny of a horse. Gulliver explains that "The Word *Houyhnhnm*, in their Tongue, signifies a *Horse*; and in its Etymology, *the Perfection of Nature*" (Swift 226), but, according to Clark (and we can judge by ourselves), it is based on the sound of *whinny* (31). The term *Yahoo* is another form of *whinny*. As Clark states: "It is within the realm of possibility, surely, that Swift, toying with the word *whinny*, saw in *whi, who,* which he spelled phonetically (having cautioned against spelling "exactly as we speak"!), *hoo* or *hou.* Now, as he usually did, he turned the word *whinny* fore and aft: *Ywhinn* → *Yhoonn.* Supplying a vowel and dropping the innocuous nasal *n's* provided Swift with *Yahoo*"(31-32). So the two terms *Houyhnhnm* and *Yahoo* referring to such different inhabitants in the Houyhnhnmsland both come from the English word *whynny* !

In *Gulliver's Travels,* the acquisition and study of language is a persistant topic. Once Gullivers arrives in a strange country, the first thing is to communicate with the inhabitants there. This communication always begins with body language and guesses regarding the meaning of the speaker(s). For instance, a short while after Gulliver finds himself bound on the beach of Lilliput, he is offered a long speech by "a Person of Quality" (Swift 11), and "I could observe many Periods of Threatnings, and others of Promises, Pity, and Kindness"(Swift 12). By putting his finger frequently on his mouth, Gulliver signifies that he needs food. In Brobdingnag, when Gulliver is held up by the peasant between his "Fore-finger and Thumb" (Swift 77-8), he lets this giant know how cruelly he is hurt by groaning and shedding tears, as well as turning his head towards his sides.

In all the countries where Gulliver stays long, he studies the languages as an ardent learner. The author introduced in detail the way in which Gulliver studies languages. Usually he gets the help from the local inhabitants and starts by learning the name of objects around him. In a few weeks he would make observable progress and in a few months he could communicate, though not that fluently.

In Lilliput, six scholars are assigned to instruct Gulliver and in about three weeks he declares to have made "a great Progress in Learning their Language"(Swift 22). When the boys and girls venture to "play at Hide and Seek" in Gulliver's hair, Swift did not forget to remind the reader that Gulliver "now made a good Progress in understanding and speaking their language" (Swift 27).

In Brobdingnag, Gulliver learns the language from *Glumdalclitch,* the daughter of the peasant who first finds Gulliver in Brobdingnag. Their way of learning language is like this: "When I pointed to any thing, she told me the Name of it in her own Tongue, so that in a few Days I was able to call for whatever I had a mind to"(Swift 84). When a friend of the peasant comes to see Gulliver, the latter asks the peasant "in his own Language how he did, and told him he was welcome; just as my little Nurse had instructed" (Swift 85). When at home and on their way to the Metropolis *Lorbrulgrud*, *Glumdalclitch* also teaches Gulliver their alphabet and how to read by using a little book which she carries in her pocket. In the picture below we can see that when Gulliver is learning a language, he is really having a good time.



(Swift 90)

Two months after Gulliver' s arrival in Brobdingnag, Gulliver does not forget to mention that "I could now speak the Language tolerably well" (Swift 89). When he is questioned by the queen, Gulliver answers "as distinctly and in as few Words as I could" (Swift 91). When Gulliver gives an account of how he has been treated by the peasant, he remembers to remind the reader that he is not quite at home with the language and speaks "with great Improprieties and Hesitation" (Swift 92). But when he has stayed long enough and is supposed to be able to communicate freely, this kind of reminders no longer appear.

On the flying island Laputa, a person is sent by the king to teach Gulliver language. Here Gulliver writes down "a great Number of Words in Columns, with the Translations over against them"(Swift 49). The tutor teaches him some short sentences by ordering the servants "to fetch something, to turn about, to make a Bow, to sit, or stand, or walk, and the like" (Swift 149). This method of teaching a language is a direct way, and is today still being used in our class of language training. For this language of *Laputa* (also used in the lower land *Balnibarbi*), Gulliver acquires a tolerable proficiency in about a month (Swift 153).

In the country of horses—Houyhnhnmsland, Swift also described the process of Gulliver learning the local language. When Gulliver first meets a horse in this country, He reaches his hand to stroke him but is refused. Then the horse neighs several times "in so different a Cadence" (Swift 214) that Gulliver begins to think he is speaking in "some Language of his own"(Swift 214). When another horse comes, Gulliver finds they neigh frequently to each other, as if they are engaged in serious conversation (Swift 217). So his guess that these horses have their own language is further confirmed and he starts to communicate by pronouncing *Yahoo* in a loud voice (Swift 217). The first step of his language learning is the same as that in Brobdingnag. At dinner, the master teaches him the names of food and other objects around them such as oats, milk, fire, water, etc.(Swift 222). Gulliver is quite eager to learn the language. He "pointed to every thing, and inquired the Name of it, which I wrote down in my *Journal Book* when I was alone, and corrected my bad Accent, by desiring those of the Family to pronounce it often" (Swift 225). In about ten weeks Gulliver is able to understand most questions raised by his horse master and in three months he can give his master "some tolerable Answers" (Swift 226). Maybe because it is a language used by creatures other than human beings, it takes longer time— five months (in Brobdingnag it is about two months) for Gulliver to understand whatever is spoken and express himself "tolerably well" (Swift 226).

Swift' s knowledge of language is also shown in other aspects in the book. In the School of Political Projectors at Lagado, the students try to help the government by discovering plots and conspiracies. Except for being skillful "to examine into the Dyet of all suspected persons; their Times of eating; upon which Side they lay in Bed; with which Hand they wiped their Posteriors; to take a strict View of their Excrements, and from the Colour, the Odour, the Taste, the Consistence, the Crudeness, or Maturity of Digestion"(Swift 179), they are "very dextrous in finding out the mysterious Meanings of Words, Syllables and Letters. For Instance, they can decypher a Close-stool to signify a Privy-Council; a Flock of Geese, a Senate;...." (Swift 180). This list of deciphering mysterious meanings of words lasts nine full lines. Here the knowledge of language is used by Swift to expose the dark side of the politics and the meanness of the politicians and to achieve his main aim of making satire on European politics which is discussed in the previous section of this thesis.

In *Gulliver's Travels*, every country has its own fictional language and in every country the hero Gulliver is assiduously involved in learning language. Why did Swift choose to do this? The first reason is that the author himself had a strong interest in language[1] and was equipped with rich knowledge of language so that he could arrange these detailed descriptions of languages at his will. The second reason is that, in this way, he could achieve readability, i.e. achieve the literary function of pleasing so that a reader can enjoy something in his reading. The third reason is that he needed to add to the verisimilitude of his novel. The situation in Europe has long been that nearly all the countries have their own languages and the reader of *Gulliver's Travels* are accustomed to this situation. Even if *Gulliver's Travels* is a fictional work, the author's attempt to make each country has a unique language could give it a higher verisimilitude so that the whole book with its severe satire is more persuasive and acceptable. While the situation of each country having a unique language in *Gulliver's Travels* helps raise the verisimilitude of the novel, the knowledge of language used in "discovering plots and conspiracies" by the governments in the novel makes direct satire on European politics. Another thing worth noticing is that, by describing the method employed by Gulliver in learning languages, the author is also bringing out the literary function of teaching.

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[1] Surely, Swift himself was much interested in linguistic games. As pointed out by Kelly, "Swift clearly enjoyed voyaging beyond the bounds of standard English into linguistic realms of his own invention" (19). He was not only doing these games for the sake of the book, he was also doing them to satisfy his own interest. He even devised a parlor amusement and descripted it as: "More than once, where some of both Sexes were Company, I have persuaded two or three of each to take a Pen, and write down a number of Letters joined together, just as it came into their Heads"(qtd. in Kelly 19), and the result is that the women producing Italianlike gibberish and the men, pseudo-high Dutch (see Kelly 19). It can be supposed that when Swift was playing such linguistic games in his writing *Gulliver's Travels*, he must have enjoyed them with the same enthusiasm as in the parlor amusement.

In comparison, Li Ruzhen also spent much space of his work on the languages, yet his emphasis is different from that of Swift. In *Flowers in the Mirror*, Li did not state that each country Tang Ao and his companions visit has its own language. Tang Ao and his companions don' t need to learn local languages (at least it is not mentioned in the novel) and they have no problem in communicating with the local inhabitants. Li' s emphasis is on introducing his knowledge of language as *Fanqie* and *phonetic scheme*,etc. In doing this, he mainly realized the literary function of teaching. Yet, by employing knowledge of language in those games for consuming wine, he brought entertainment to the reader and achieved the literary function of pleasing.

III. Classical and Renaissance works

Classical literature (referring to the Greek and Roman literary tradition) is the basis of Western literature, which is similar to the situation in China where classical works form the basis of a scholar' s study. Like Li Ruzhen who had a good knowledge of Chinese classics, Swift also had a good knowledge of classical literature. Gilbert Highet, when discussing "the Dispute of the Ancients and Moderns," comments on Swift in this way: "he was a good classical scholar, but admired and cultivated originality" (285). This quotation clearly means that Swift did have a good knowledge of classical works and on this base he tried to create his writings in a original and personal way. What is unique of Swift is particularly his satire. In creating his masterpiece *Gulliver's Travels*, Swift made use of his knowledge in this field to achieve his aims. In a certain sense, we can say that, without the knowledge in classics, this book – *Gulliver's Travels*— could not have been written. All the imagination of those pygmies, giants, houyhnhnms, flying island, ideal countries are not purely out of Swift' s mind, but based on knowledge of classics, though it doesn' t deprive Swift of his originality with which he made his work a great work.

In Part One of *Gulliver's Travels*, Gulliver is a giant and in Part Two, he is a pygmy. A lot of interesting, fabulous episodes and detailed descriptions which give the reader much entertainment in reading the work are based on this foundation. In Lilliput, Gulliver is tied down on the ground and the local inhabitants move onto his body with great curiosity and amazement. Gulliver eats so much food and his need of clothes causes so many tailors to labor. When he visits the metropolis of Lilliput, he has to be very careful not to hurt any inhabitant or building, and when the country is threatened by war, he draws the whole enemy fleet to the shore of Lilliput. In Brobdingnag, he performs in front of an audience of giant local inhabitants, he stands on the hand of the queen, he suffers the attacks from a mouse and a frog, he rows a boat in a cistern full of water. All these funny descriptions bring the reader to smiles, to laughs and achieve the literary function of pleasing. When Swift was designing these two parts, he definitely employed his knowledge in classical works.

Narration about giants and pygmies existed in classical works and Swift definitely had a good knowledge of them. Philostratus, the ancient Greek writer (C.AD 190— ?) was the author of *Imagines*, in which he discussed "65 real or imaginary paintings on mythological themes in a portico at Naples" (*New Encyclopaedia Britannica*, vol 9, 388). Among the pictures was the capture of the sleeping Hercules by the pygmies. Sir Walter Scott points out that Swift took Philostratus' account of this picture as his model for the first scene in Lilliput when Gulliver lied on the beach and was attacked by the inhabitants in a similar way (see Eddy 53). William A. Eddy declares that no scholar has ever challenged Scott's statement on this point (53).

Swift was familiar with the works of Lucian (125— ca. 185 A.D.). He borrowed many works of satire by Lucian and purchased d' Ablancourt' s "three little volumes of Lucian in French" in 1711 (see Eddy 53). Eddy quotes the Unknown Author from Fielding' s *Amelia* as saying of Swift "There is one whom I am convinced he studied above all others...Lucian" (Eddy 54).

In Part One of *Gulliver's Travels*, Swift wrote a severe satire of European monarchs and politics. Lilliput is a country often at war with its neighbor, whose monarch wanted to make use of Gulliver' s military service. When Gulliver draws back a fleet of Blefuscu, the monarch of Lilliput wants him to draw all the fleets of the enemy country and desires to put it as a province and send a viceroy to rule there. In this way the greedy nature of a monarch is exposed and Swift achieved his satire on the European monarchs. In doing this, Swift employed his knowledge of Lucian. This is mainly related to Lucian' s *True History*. Although the visitors in Lucian' s work traveled to the moon, there are a lot parallels between this and Swift' s book. According to Eddy, "Gulliver' s reception in Lilliput, his discovery that the inhabitants are in imminent danger of attack by an enemy, his enlistment and military service rendered" can be matched by quite similar narration in Lucian' s work (54). Eddy also points out that Lucian' s *Icaromennipus or a Voyage to Heaven* is a very important source for the satire of Lilliput. In Lucian' s work, "Civilization and man are ridiculed by a description of their petty appearance as it is viewed from a great height" (56).

In Part Three of *Gulliver's Travels*, the flying island of Laputa is an important image. Swift used this image to achieve two aims. One is to make some mild satire on the monarchs who were so involved in their personal interest that they ignored their duties in governing the country. The second is to make an analogy of the relationship between England and Ireland. The third is to add to the readability of his book by making such a wonderful island which can fly here and there according to the will of the controller. In creating such an image, Swift also employed his knowledge of Lucian' s work, which is noted by H.W.L. Hime: "Swift, must have had the *True History* in mind, when he introduced into *Gulliver's Travels* the flying, dirigible island of Laputa, whose inhabitants live in constant dread of the sun" (see Eddy 54).

As discussed in the section of Politics and History in this chapter, the Houyhnhnmsland in Part Four of *Gulliver's Travels* is used by the author to express his ideas about an ideal country. Gulliver becomes so fond of the inhabitants there and hopes he can stay there for the rest of his life, and even when he returns home, he can hardly bare the presence of his wife and children and prefers to spend time with his horses. As for the theme of the superiority of animals to man in Houyhnhnmsland in Part Four of *Gulliver's Travels*, Swift got some aspiration from the tradition of Ulysses and the Beasts (Eddy 175). In Homer' s *Odyssey*, Ulysses and his companions arrived at the palace of Circe' s and some of his companions were transformed by Circe into bestial shape. In Homer' s work, these men were tricked into the bestial shape and were happy when they were restored to the "human form divine" (Eddy 175). But the ancient biographer and moral philosopher Plutarch living in the first century (see Harvey 626) threw some novel light on this matter in his "That Brute Beasts Make Use of Reason" included in his *Morals* which was translated in English in 1704 and Swift was very familiar with (Eddy 175). In this article by Plutarch Ulysses and Gryllus (Ulysses' companion who had been transformed into a hog) had a dialogue. The main idea of the dialogue is that Gryllus in the form of a hog argued that "his company are better off as beasts than they were before as men" (see Eddy 175-6). Eddy thinks that "Plutarch' s dialogue is precisely in the spirit of Swift" (176). In *Gulliver's Travels*, the Governor of the Houyhnhnms made use of all the points of Gryllus and more (Eddy 176).

The Renaissance that started in late 14th century and flourished in the 15th century was a time of "great flowers of art, architecture, politics and the study of literature" (Drabble 829). It is taken as the end of the Middle Ages and the beginning of the modern world. In this great movement, there appeared many great writers and artists who produced long lasting influence in many fields. Swift surely had good knowledge of the works by Renaissance writers. In creating *Gulliver's Travels*, he also made use of this knowledge. Two particularly important Renaissance writers need to be mentioned here, one is Rabelais (ca. 1490— ca. 1553), the other is Sir Thomas More (1478— 1535).

According to Spence, Swift was "a great reader and admirer of Rabelais" (qtd. in Erskine-Hill 13) and Eddy shows that "he was able to quote him off-hand in his correspondence with verbal accuracy" (57).

In Part Two of *Gulliver's Travels*, Swift created the country of Brobdingnag where local inhabitatnts are giants compared with Gulliver. This situation helps Swift to achieve two aims. One is to add to the readability. A lot of episodes as mentioned previously in this section bring great enjoyment to the reader and fulfil the literary function of pleasing.

The second is to supply a background for Swift to express his idea of a good king (see related discussion in the section of Politics and History in this chapter). When designing this part, Swift definitely made use of his knowledge of Rabelais' *Gargantua and Pantagruel*. As pointed out by Howard Erskine-Hill, the first thing in Rabelais' *Gargantua and Pantagruel* that had influence on Swift's composition is the image of giants. In Rabelais' work "the giant Gargantua accidentally ate six pilgrims in the lettuce of his salad, but they, clinging perilously to his teeth as he swallowed a great draught of wine, were eventually plucked out with his tooth-pick, and pissed away across the country side in a torrent of his urine" (12). This image of a giant is quite comparable with the giants in Part Two of *Gulliver's Travels* where Gulliver is a pygmy and is in the position of the pilgrims in Rabelias' work.

In Part Three of *Gulliver's Travels*, Swift ridiculed some projectors through what Gulliver saw in the Grand Academy of Lagado. To the reader, those projectors are doing silly things such as making cloth from spiders' webs, making food by processing human excrement, etc. Swift had two reasons to do this. One is that he was questioning the reason of man. As pointed out by Pinkus: "Swfit has also directed his satire at reason itself, that is, man's reason, sublunary reason" (193). Where will this endless pursuit lead man to? There seems no end. Does man have sound reason? These projectors seem to be irrational and mad. The other reason is that Swift was making "an attack upon folly in government"(Case 112). As pointed out by Case, "Swift apparently felt that the Whigs had transferred to the scientists much of the encouragement which earlier administrations had given to men of letters, and he regarded this tendency as symptomatic of the inclination of the Whigs toward chimerical experimentation in all fields" (Case 112). When describing these projectors, Swift also made use of his knowledge of Rabelais.

According to Eddy, the Academy of Lagado was largely based on the court of Queen Whim in book V. Chapters XXI and XXII of *Gargantua and Pantagruel* (60). Swift once quoted from Rabelais' work one of the Abstractors of Queen Whim's court: "For as to your scheme of raising one-hundred-and-ten-thousand pounds, it is as vain as that of Rabelais, which was to squeeze out wind from the posteriors of a dead ass"(qtd. in Eddy 59). Note that he was so familiar with this kind of abstractors who are doing something quite similar to those professors of Lagado. Nocolson and Mohler also point out that one of the projectors in Part Three of *Guliver's Travels* who attempted to "reduce human excrement to its original food" was based upon Rabelais' "Archasdarpenin" (254).

In a word, Swift made use of his knowledge of Rabelais to design plots and characters in *Gulliver's Travels* to achieve his satirical purpose.

Another Renaissance writer who had important influence on Swift was Sir Thomas More. As pointed out by Kathleen Williams, "He [Swift] deals with the fundamental concerns of humanity, but his way of dealing with them is conditioned by what other men are making of them" (58-9). Actually, the influence of Sir Thomas More' s *Utopia* on Swift' s *Gulliver's Travels* is also certain. Swift had a very high regard toward More. Ronald Knowles says that "Swift deeply admired the moral and spiritual integrity of More" (20). In Part Three of *Gulliver's Travels*, Gulliver had much conversation with Brutus and was told by Brutus that "his Ancestor *Junius, Socrates, Epaminondas, Cato* the Younger, Sir *Thomas More* and himself, were perpetually together: A *Sextumvirate* to which all the Ages of the world cannot add a seventh" (Swift 185). By praising More in such a way, Swift showed his admiration of More and his agreement with More' s ideal. Even though Swift dispelled the association between his work and More' s by declaring in "A Letter from Capt. Gulliver, to his Cousin Sympson" that "some [readers] are so bold as to think my Book of Travels a meer Fiction out of mine own Brain; and have gone so far as to drop Hints, that the *Houyhnhnms* and *Yahoos* have no more existence than the Inhabitants of *Utopia*" (Swift 289), his intention of doing so is judged by Jenny Mezciems as having double sides: "it is insulting to be told he made it all up, and more insulting to have it linked with *Utopia*, which even Gulliver knows is a fiction. Gulliver wants his book to be taken for original fact— but there is an underlying claim that as fiction it should not stand alone and that Swift wants it to be seen as imitative of More' s work" (Mezciems 248).

F. P. Lock points out that both Swift and More "believe in no class of specially trained administrators"(20) and that both hated the overwhelming mass of laws. In their ideal countries, there were few laws (see Lock 21). In *Utopia*, the function of the senate is to "determine what commodity is in plenty in each particular place and again where on the island the crops have been meager. They at once fill up the scarcity of one place by the surplus of another" (qtd. in Lock 21). In *Gulliver's Travels*, the business of the Houyhnhnm assembly is to "inquire into the State and Condition of the several Districts; whether they abound or be deficient in Hay or Oats, or Cows or *Yahoos*? And where-ever there is any Want (which is but seldom) it is immediately supplied by unanimous Consent and Contribution" (Swift 257-8). The similarity is obvious. Besides, both More and Swift thought that war was "a madness of kings" (Lock 20) and made severe criticism and satires on this horrible phenomenon.

The knowledge of More is useful for Swift in his designing the Houyhnhnmsland—his ideal country. By describing this land, Swift offered his political ideals, and many of them are closely related to those of More' s. Without knowledge of More, he could hardly put forward these ideals in Part Four. In some sense we can say Swift' s knowledge of More is helpful for him to complete the narration of the part of *Gulliver's Travels.*

In this section we have discussed Swift' s knowledge of classical works and Renaissance works and the way this knowledge is used in *Gulliver's Travels.* Swift made use of this knowledge to design the frames of stories in his work in which he made a lot of interesting episodes and fabulous descriptions so that the readability of *Gulliver's Travels* is greatly benefited and the literary function of pleasing is fulfilled. Meanwhile, this knowledge of classical works and Renaissance works helps him achieve his aim of making satire on man' s negative aspects and on the European politics. This knowledge also helps him in creating the ideal country of Houyhnhnmsland so that his satire of man reaches its peak and supplying him with a background to offer his political ideals. Thus we can conclude this knowledge of classical and Renaissance works plays a role in *Gulliver's Travels*.

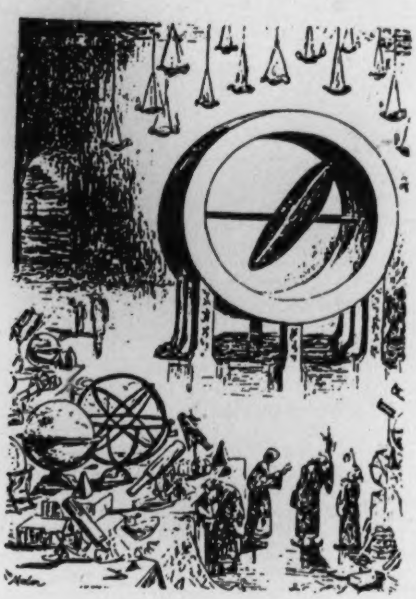
IV. Physics

Frances D. Louis points out that "Swift was born into a century marked by a great deal of what we call revolution"(xxiii). He means that Swift' s age was one of great changes and the changes mainly refer to the modern science and its influence on industry which began to change the world tremendously. In his century, "Man was rapidly increasing his accurate knowledge of the solar system, plant structure, human physiology, mathematics, chemistry, and the physics of motion" (xxiv). Nicolson and Mohler also note that the seminars on scientific experiments and the advance they gained at the time attracted huge audience and "The widespread interest in scientific discovery among English men of letters was in large part a natural result of the rapid strides made by science during the seventeenth and eighteenth centuries" (229). Swift, as a writer with keen sight and a satirist with a deep understanding of the society, was positive in employing the knowledge of so called "new science" (Nicolson 228) in his *Gulliver's Travels* to achieve its appeal and impetus. Here I would like to talk about his knowledge in physics.

One most obvious example of displaying knowledge in physics in *Gulliver's Travels* is surely the flying island Laputa. Even though some fanciful flying cities had appeared in literary books before Swift, as Asimov points out, "Jonathan Swift was the first to attempt an explanation of its workings in line with the findings of contemporary science" (144).

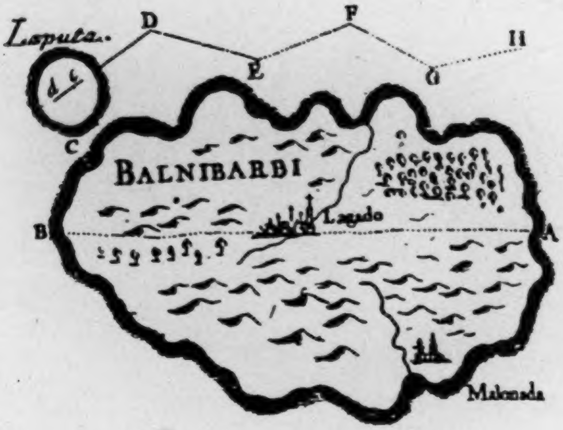
In Part Three Chapter Three of the book, Gulliver gives us a fine description of the appearance of this flying island: "The flying or floating Island is exactly circular; its Diameter 7837 Yards, or about four Miles and an Half, and consequently contains ten Thousand Acres. It is three Hundred Yard thick" (Swift 154). For those who saw it from the bottom, it is "one even regular Plate of Adamant." And upon the bottom were "several Minerals in their usual Order; and over all is a Coat of rich Mould ten or twelve foot deep" (154). This island was itself a universe and had its own water circulation. This huge floating island could move toward every direction at the speed that its monarch preferred. In the seventeenth century, such a flying island was definitely a product of imagination, but Swift made use of the physical and mechanical knowledge available in this time to make this flying island as plausible as possible.

As shown by Asimov, Swift based the mechanism of his flying island on the theory of the English physicist William Gilbert (1540-1603) and Johannes Kepler that "the planetary motions were the result of magnetic forces" (Asimov 156). The most important thing in this mechanism was found in a cave "situated at the Depth of an Hundred Yards beneath the upper Surface of the Adamant" (Swift 155) which was "a Load-stone of a prodigious Size, in Shape resembling a Weaver' s Shuttle... This Magnet is sustained by a very strong Axle of Adamant, passing through its Middle, upon which it plays, and is poised so exactly that the weakest Hand can turn it. It is hooped round with an hollow Cylinder of Adamant, four Foot deep, as many thick, and twelve Yards in Diameter, placed horizontally, and supported by Eight Adamantine Feet, each six Yards high. In the Middle of the Concave Side there is a Groove Twelve Inches deep, in which the Extremities of the Axle are lodged, and turned round as there is Occasion" (Swift 155).



(Swift 155)

The motion of the island was caused by magnetic forces. The stone had an attractive end and a repulsive end while that part of the earth was supposed to be "a permanent magnetic north pole (or south pole)" (Asimov 156). When the attractive end was pointing to the earth, the island would come down, and when the repulsive end was pointing to the earth, the island would go up. When the stone was put oblique, the island would do the same, "but less rapidly" (Asimov 156) and could move forward or backward. "If it were positioned horizontally, Laputa wouldn' t move at all (Asimov 156). The explanations of the mechanism of this flying island sounds plausible, yet we know it is impossible in reality for the magnetic forces are exaggerated. Asimov notes that "To have Laputa act by magnetic force, as here described, would require... the magnet (of the earth) on Laputa to be of impossible strength" (156).



(Swift 156)

Even though it is actually impossible (see Asimov 156), these detailed explanations show the knowledge of Swift in contemporary physics and exhibits the historical limitation of knowledge as discussed in Chapter One.

Swift is the first one attempting to give a plausible explanation to the mechanism of such a flying island. After him, more and more science fiction writers gave their scientific explanations to various man made vehicles such as the huge machine island on the sea, huge gun shell that carried men to the moon, etc. under the pen of Jules Verne (1828-1905). It is worth mentioning that in Chapter Two of this thesis I have discussed that Li Ruzhen also wanted to give a plausible explanation to his flying carriage. In Li's time, the scientific knowledge was still not quite developed as that in Europe. Comparatively, Li's explanation seems less plausible to the eyes of a modern reader. This shows the historical limitation on knowledge.

As discussed in the previous section, this flying island is an important image in *Gulliver's Travels*. It is a symbol of the relationship between England and Ireland. The king of Laputa is the target of the mild satire on those monarchs who let their interests and hobbies get over their duties in ruling. Also, the inhabitants on this island are so much alienated by "their abnormal absorption in things remote from the concerns of men" (Williams "Gulliver in Laputa" 60) that they look quite abnormal in their appearences. Through the descriptions of the strange appearances of the inhabitants on this island, Swift expressed his worry about the effect of modern science on man, as he generally believed in modern vice and traditional virtue, and he was not satisfied with the shift of the encouragement by the Whigs from men of letters to the scientists (Case 112).[1]

Since this flying island is so important, Swift employed his knowledge of physics available for his time to make quite detailed explanations of the mechanism of it. In doing so, he had four aims.

The first aim is to show his knowledge in the scientific field. He wanted to prove that, not only those scientists represented by Newton could do the scientific projects, he, as a man of letters, could also do such a scientific project as making an island flying. He meant that the government should rethink their policy in transferring more support to the scientists.

The second is that he was making some satire on the limitation of the modern science. Even if so well designed, the flying island can only fly and move within a certain height and area. It can not go beyond the limitation, otherwise, danger comes. Why is the law of magnetism not universal? Swift did not give any answer. Actually he was making a satire which is pointed out by Kathleen Williams in this way:

> Further, the relation of the greater and lesser magnets, Laputa and Balnibarbi, suggests the limited usefulness of that understanding of the laws of the universe upon which the Newtonian era so prided itself, and which is one of the main objects of Swift's satiric comment in this book. (Williams "Gulliver in Laputa" 61)

The third aim is that Swift did so to add to the verisimilitude of this important image. Verisimilitude refers to the "plausibility of a literary work." [2] This quality of literary work can be realized in different ways as suggested by A. F. Scott in his *Current Literary Terms* "this quality can be achieved in literature by skilful selection and presentation of the material of human life." (303) We believe that skilful handling of knowledge also helps achieve this aim. Swift's time was such a one in which modern science was developing fast. He needed a scientific explanation to make his reader believe (or feel like to believe) that such a flying island is plausible, otherwise it would be taken as mythological flying carpet.[1] Swift definitely did not hope his *Gulliver's Travels* to be taken as mythological work. If this had been the case, the satire in this book would be much less powerful as common readers in that scientific age would not take mythology as seriously as a travel book like *Gulliver's Travels.* The power of satire is related to truth. If a sense of truth— verisimilitude is consistently achieved in a satirical literary work, the power of the satire in it is enhanced. Ernest Tuveson points out:

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[1] Note that Kathleen Williams thinks "Swift's opinion of the scientific achievment of his day is, in itself, inadequate, and considered as an attack on science the third book must seem wrongheaded and unfair. But considered as what it really is, an allegorical presentation of the evils of a frivolous attitued to life, it is consistent and effective" (Williams 60).

[2] Quoted from *Brief Definitions of All Essential Literary Terms* by Saad Elkhadem.

> Swift has forced them to see what appears to be their own image, but horribly distorted in the mirror: they look for any means of escape from that vision, for a mirror reflects the truth. (75)

Swift's use of his knowledge of the laws of physics lends an air of authority to his narrative, making his satirical intent that much more plausible because it is completed in the scientific language of his day.

The last aim of Swift in doing so is to add to the readability of his work. We can not deny that, in the descriptions of this flying island, there is a hint of science-fiction. Science-fiction is today an important genre of literature. In this kind of literary works, we can read a lot of detailed scientific explanations and descriptions. For Swift, this could be a kind of experiment of scientific fiction—give his reader a chance to enjoy this genre. Swift might be counted as one of the forerunners of science-fiction.

V. Astronomy

Astronomy is a branch of science that made huge advances in the seventeenth century. *Gulliver's Travels* exhibits the state of this new knowledge.

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[1] The Arabian flying carpet may have its own verisimilitude, but for his readers in 18th century England, Swift had his reason to explain the mechanism of the flying island in the scientific language of his day.

Arthur O. Lovejoy has an excellent discussion about the changes in the cosmography happened in the 16th century. He thinks there are five "truly revolutionary theses in cosmography which gained ground in the sixteenth and came to be pretty generally accepted before the end of the seventeenth century," (108) the first being "the assumption that other planets of our solar system are inhabited by living, sentient, and rational creatures." (108) Swift's flying island of Laputa has something to do with this thesis. This flying island could be a miniature of a planet, especially in the time before a plane was invented. It can fly here and there and it has inhabitants (living, sentient, and rational) on it! This flying island plays an important role in *Gulliver's Travels* as we discussed in IV of this chapter.

The Music of the Spheres is another thing related to astronomy. One morning when Gulliver is on the flying island, the king and his subjects are playing on their all musical instruments "for three Hours without Intermission" (Swift 150). The tutor told Gulliver that "the People of their Island had their Ears adapted to hear the Musick of the Spheres, which always played at certain Periods" (Swift 150), and the court of Laputa played on the instrument "to bear their Part" (Swift 150). According to Isaac Asimov, this "Musick of the Spheres" originates from the Greek astronomers who supposed that the universe consisted of a set of "concentric transparent spheres, each turning after its own complex fashion and carrying the planets and other heavenly bodies around the Earth," and when these spheres were turning, they produced "a kind of music or 'Musick of the Spheres.'" A mortal could not hear this music (Asimov 150-1). The astronomy of Swift's time already discredited this concept (see Asimov 151), yet Swift employed the knowledge of the Music of the Spheres to create a kind of fantastic atmosphere. While it is supposed that a mortal could not hear this music, the inhabitants of the flying island can, and they even join it with their own instrument. Their behavior seems to be so different from common people and so strange. Actually, we can find the implication made by Swift that these inhabitants were alienated. In this way he showed his worry about the effect of modern science on man. He worried that under the influence of modern science, man would be alienated. This motif has been much developed by the writers in the nineteenth and twentieth centuries.

For this purpose of showing the alienation of man, Swift made the inhabitants on Laputa, the flying island never enjoy "a Minute' s Peace of Mind"(Swift 151) for some changes they observed in the celestial bodies. They worried that the earth might be someday "absorbed or swallowed up" by the sun; the sun would by and by "be encrusted with its own Effluvia, and give no more Light to the World;" the next comet might "probably destroy us;" and "the Sun daily spending its Rays without any Nutriment to supply them, will at last be wholly consumed and annihilated; which must be attended with the Destruction of this Earth, and of all the Planets that receive their Light from it" (all from Swift 151).[1]

From the problems obsessing the mind of the inhabitants of the flying island, we can see Swift actually had good knowledge of the "new science," otherwise he could not have discussed these problems in such a technical way. As pointed out in the previous section, Swift' s attitude is basically against the negative impact of science and the support given to scientists by the Whigs. He made use of this knowledge in astronomy to make satire on those scientists who were so much involved in the problems that seem to be far away of common people and pointed out the possibility of alienation brought to man by modern science.

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[1] It is true that these problems are "Causes which very little affect the rest of Mortals" (Swift 151), most of them do exist even now in the consideration of scientists.

Nicolson and Mohler explain that, according to Newton' s analysis, "there must exist a nice balance between the velocity with which the earth is falling toward the sun and its tangential velocity at right angles to that fall"(240). Should there be any disturbance to the "due proportion of velocity," it would mean great disaster to the earth. They further explain that "The most obvious possibility of disturbance is the gradual decrease of our tangential velocity, for the earth' s orbit would no longer repeat itself year after year, but would approach the sun with ever-increasing speed, eventually to fall into it" (240). Until now, there seems to be no theory goes against this proposal. Also, about the effluvia covering the sun, "There will come a time when enough of the hydrogen fuel of the Sun will be turned into helium ' effluvia' to alter the Sun' s nature" and the earth would not be a livable world, though that time would be 7 billion years in the future (Asimov 152). About the threat of a collision between a comet and the earth, eventhough Asimov says that "We know *now* that comets are small objects and that the insubstantial haze that makes up a comet' s extended body and, particularly its tail, is little more than visible vacuum" (152). Even recently it still caused uneasiness and disturbances in common people when some comet is at the position closest to the earth. As to the problem of the sun' s energy to be exhausted, according to Asimov, "this was an extraordinarily prescient thought" (153). The chief source for this concern, as pointed out by Nicolson and Mohler, is Robert Hooke. He wrote "I question not but that there may be very cogent Arguments drawn to prove, that the Light of this Body of the Sun may be caused by an actual Fire, or Dissolution of the superficial Parts there of...But some may object and say, that if this were so, certainly the Body of the Sun in so many Thousand Years would have been all consumed, at least it would have grown sensibly less"(qtd. in Nicloson 242).

Paradoxically, Swift himself had strong interest in science and this pushed him to discuss some problems and show his insight in the field of astronomy of his time.

The people on the flying island had made great astronomical discoveries. Their telescopes, though not exceeding three feet, "magnify much more than those of a Hundred with us" (Swift 157). At the time in Europe, scientists were using telescopes more than one hundred feet long. Only in 1751, thirty-one years after the publication of *Gulliver's Travels*, "the optical advance made achromatic parabolic lenses possible and ...Comparatively short ones of better magnification, like those of the Laputans, came into existence" (Asimov 157-8). Asimov comments that "though Swift did not live to see it, he had scored a nice bit of prediction" (158).

Another thing that reveals Swift's scientific acumen is his statement regarding the Laputans who "have likewise discovered two lesser Stars, or *Satellites*, which revolve about *Mars*; whereof the innermost is distant from the Center of the primary Planet exactly three of his Diameters, and the outermost five; the former revolves in the Space of ten Hours, and the latter in Twenty-one and an Half; so that the Squares of their periodical Times, are very near in the same Proportion with the Cubes of their Distance from the Center of *Mars*; which evidently shews them to be governed by the same Law of Gravitation, that influences the other heavenly Bodies" (Swift 157). What is incredible is that "Mars does possess two satellites and only two" (Asimov 158) and this information was not known by people in Swift's age! These two satellites were discovered in 1877, when it was already 150 years after the publication of Swift's book (Asimov 158). Even though it might be "pure coincidence" for Galileo found that Jupiter had four satellites in 1610 (now we know Jupiter has more than four satellites) and Kepler, knowing that the earth had one and Jupiter had four satellites, speculated that Mars should have two satellites and Swift might employed these piece of information just for convenience (see Asimov 158), this episode is often quoted as "the most remarkable scientific prediction ever made in literature" (Asimov 158).

The knowledge of astronomy employed by Swift in *Gulliver's Travels* plays several functions. Firstly, Swift ridiculed those unpractical scientists and expressed his worry about the effects of modern science on man— alienation. The inhabitants on flying island Laputa are good examples of this alienation.

Secondly, similar to the function of physics, Swift proved that he, as a man of letters, was no less competent than those scientists. He could also make important observations in the field of astronomy. In doing so, he expressed his negative attitude toward the shift of support by the Whigs from men of letters to the scientist.

Thirdly, Swift showed his interest in modern science. His attitude toward modern science is twofold. On one hand, he showed great interest in it, on the other, he worried about its negative impact. He discussed so many scientific problems into detail, which can be taken as playing a function of teaching, i.e. to let his reader know more about the new science.

VI. Geography

In preparing to write his *Gulliver's Travels*, Swift had done much to enrich his knowledge of geography. Arthur Case reports that Swift owned "numerous books of travel, most of which contained charts of some kind"(52). Dampier's *New Voyage around the World* (1697) was one such book. It "contains some of Moll("eminent English engraver of Dutch extraction"[Case 51])'s earliest maps, including one of the world, and another of the Netherlands East Indies and the northern part of New Holland or Australia"(Case 52). Case supposes, with some certainty, that Swift had read this book intensively (52).

Swift's *Gulliver's Travels* is a great fictional work, but "it has the connecting links of detailed narrative, the solemn spirit of inquiry into strange lands, the factual records of latitude and coasts and prevailing winds, and (most of all) *the maps*..." (Moore 102). We read in Gulliver's voyage to Lilliput that he and his companions "found ourselves [themselves] in the Latitude of 30 Degrees 2 Minutes South" (Swift 6). In his trip to Brobdingnag, the wind played an important function. A "very prosperous Gale" sent them to the Cape of *Good-hope*. The winds near the *Streights of Madagascar* "are observed to blow a constant equal Gale between the North and West, from the Beginning of *December* to the Beginning of *May*, on the 19th of *April* began to blow with much greater Violence, and more Westerly than usual; continuing so for twenty Days together, during which time we were driven a little to the East of the *Molucca* Islands, and about three Degrees Northward of the Line... at which time the Wind ceased, and it was a perfect Calm" (Swift 72-3). Furthermore, in front of each part, a map is attached showing geographically the country or countries Gulliver is going to experience.

Why should the author go to such extremes to give detailed, seemingly factual geographical descriptions? His purpose was to make his fictional work more believable, for, as pointed out by Kathleen Swaim, "In details and in themes, Swift gradually alters the proportions of the mixtures of fact and fictional fact, of the real and the true, of the specific and the general. And by his skill in concocting and serving up the delicate blends, Swift makes the reader review and revise his confident evaluations of experience and himself"(20). Wagner says of the maps in *Gulliver's Travels* that they "pretend to replicate the world, offering verifiable facts (genuine coast-lines, for instance known to eighteenth-century readers) and fictional dystopias" (72). Asimov also comments that "Swift carefully includes a map or two in each part, to help him with his intention of describing the utter impossibilities he catalogues in as straight-faced and plausible a manner as possible" (2). All this points to the intention of the author who hoped to achieve verisimilitude by supplying as many as possible known facts in his fictional world. The question of the relationship of experience to truth is best summarized in the words of Ernest Lee Turesm:

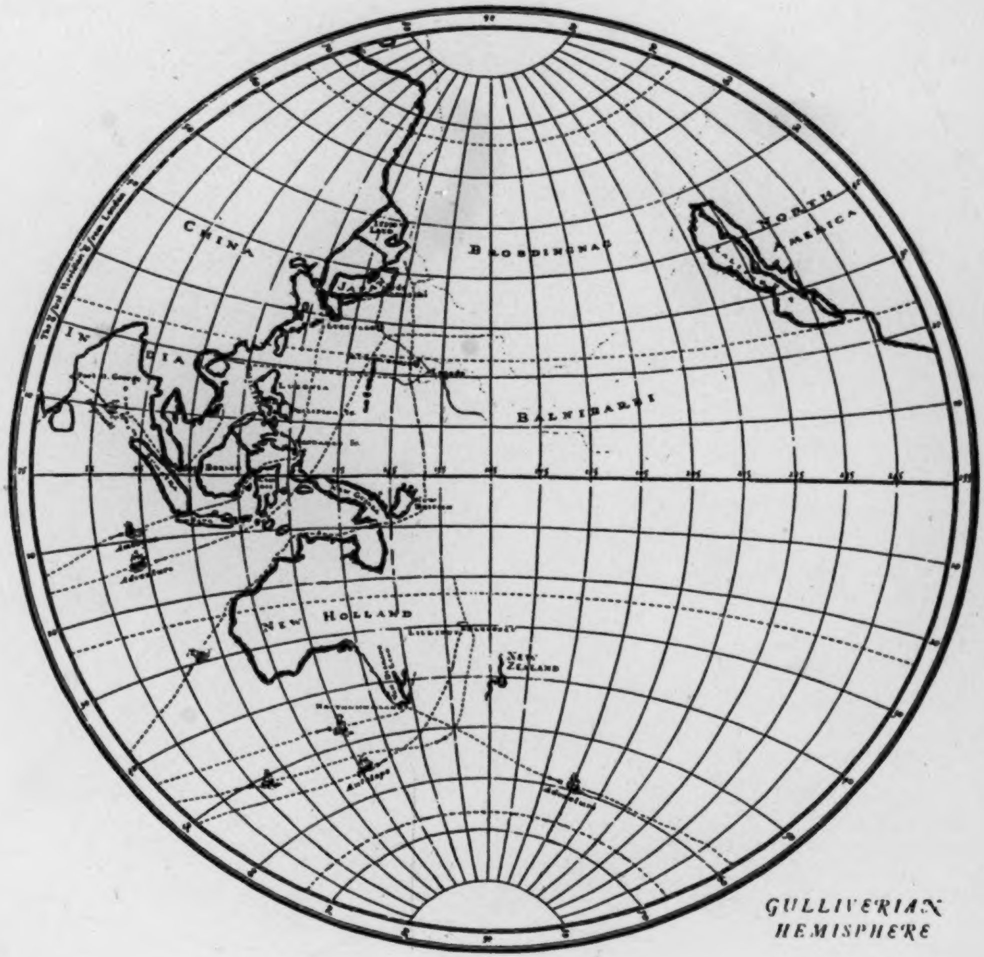
> If truth is the joining or separating of signs, which represent ideas as impressions, then the study of truth is the study of experience within. This does not mean a flight from reality, but rather that the locus of reality must be found within rather than without. (Turesm 26)

Swift did know that the locations of the countries in *Gulliver's Travels* were fictional, yet he employed every means as these maps and detailed geographical descriptions to achieve a sense of truth in the mind of his reader' s. And with this sense of truth, his reader is supposed to take the whole book more seriously. Even though this book looks fabulous at first sight, this sense of truth actually is consistent from the beginning to the end, the test being that a reader would be able to find that the author was telling the truth of this world under the cover of fictional travel adventures. Swift' s geographical subterfuge was so successful that, according to J. R. Moore, Dr. Arbuthnot wrote a letter to Swift on November 8, 1726 in which he stated that he "lent the book to an old gentleman, who went immediately to his map to search for Lilliput" (qtd. in Moore 102).

Even though some scholars such as Moore hold that "these assumptions of the essential accuracy of the geography of *Gulliver's Travels* are groundless" (102), others (Case, for instance) hold that Swift' s imagined countries are based on solid geographical knowledge available in his time.

Case does not mean that all the countries in *Gulliver's Travels* really exist and can be found in today' s maps. He takes pains to prove that Swift' s geographical locating of these imagined countries is not violating the known geographical facts in his time. This points to Swift' s excellent knowledge of geography of that time, for "he had to find, in the unexplored portions of the globe, locations for seven imaginary countries, only two of which were of considerable size" (Case 52), but the point is that Swift did not want those countries to be too close to the poles or the equator, and the climates of those countries should not "differ much from that of England" and these countries should not be too close to each other (52). Case reaches the conclusion that Swift was astute to arrange the geographical locations of his countries, because, although all the imaginary countries in *Gulliver's Travels* are properly allocated to those places unknown to Swift' s contemporaries, the length and width stated by Swift are all actually possible. Comparing Swift' s countries with Moll' s map (see. The dark lines mark the known geographical lines of the time, quoted from Case between 52- 53), Case pinpoints each imaginary land to its actual geographical counterpart (see page 102 A).

The three smallest countries, Lilliput, Blefuscu and Houyhnhnmland he shows are on different sides of Australia. Lilliput and Blefuscu are between Australia and New Zealand. Houyhnhnmland is on the south side of Australia. Case thinks that "What Swift really meant was that Gulliver had reached the southern point of Tasmania" (61).


CHINA
JAPAN
INDIA
BROBDINGNAG
NORTH AMERICA
BALNIBARBI
Luconia
Borneo
NEW HOLLAND
Lilliput
NEW ZEALAND
Adventure
Antelope

GULLIVERIAN
HEMISPHERE

Brobdingnag, the largest country of those giants, lies in the north part of the North Pacific which "remained unexplored by Europeans in 1720" (Case 52). The countries in the third book of *Gulliver's Travels*, that is Glubbdubdrib (Laputa is a flying island and has no fixed location), Luggnagg, and Balnibarbi, appear in the North Pacific between the known east and south-east Asian countries and the imaginary Brobdingnag of the giants. Case's careful scholarly examination of Swift's geographical acumen reveals once again the extent of the author's knowledge.

Swift employed his knowledge of geography in his designing the locations of countries in *Gulliver's Travels*. His main purpose is to achieve verisimilitude. His stories are fictional, but he hoped to make them more plausible. In this way, Swift achieved verisimilitude and enhanced the power of his satire, which is the main purpose of his work.

Conclusion

Swift was a great mind of his time. He made use of multiple knowledge available in his time to create his masterpiece *Gulliver's Travels*. Knowledge, with the author's skillful and artistic management, plays important functions in this great work.

The knowledge of politics and history directly serves the author's aim of making satire on the European politics. The knowledge of language serves the two functions of "please" and "teach." The knowledge in classical and Renaissance works lays out the frames of adventures (as the backgrounds of Lilliput, Brobdingnag, Laputa and Houyhnhnmsland) in the work and greatly increased the readability of it. The scientific knowledge in physics, astronomy and geography reflects the influence of Swift's time which was a "scientific, system—making, Deistic, and rationalistic age" (Williams 37). Swift did not ignore the advances in the "new science" of his time, at the same time he worried about the negative effects of it on man— alienation. He had strong interest in it and studied it. He employed this knowledge in his work to achieve his aims. Sometimes, this knowledge serves his aim of making satire on politics (as the flying island and Balnibarbi reflect the relationship between England and Ireland) and the shift of support from men of letters to scientists by the government as well as those unpractical scientist;

sometimes this knowledge achieve the purpose of teaching (i.e. introducing the knowledge of physics and astronomy). More generally, this knowledge adds to the verisimilitude and readability of the work. The detailed description and explanation of the physical mechanism of the flying island makes a reader in Swift's time inclined to believe that it was possible for such an island to fly though it is actually not, as pointed out by Asimov (156). The employment of scientific knowledge in this book also brings pleasure to the reader—in the sense of science fiction as discussed in the related section. When talking about the passage of the explanation of the mechanism of the flying island, Asimov comments that it is "excellent science fiction in the modern sense" (154). Swift can be said to be among the forerunners of science fiction.

The combination of tradition and the new science contributes (with other elements) to the marvelousness of this great work. Since its publication, *Gulliver's Travels* has achieved great impetus and attracted the attention of innumerable readers and it has always been taken as a masterpiece in European literature.

Chapter Four: The Meaning of Knowledge in Literature

In Chapter Two and Chapter Three, we discussed several categories of knowledge displayed in our two books and pointed out the functions played by particular knowledge in certain narrative circumstances. We are now going to discuss the meaning of knowledge in literature with special reference to Li and Swift. First we should like to point out two common aspects between Li Ruzhen and Jonathan Swift, then we shall discuss the four functions of knowledge in literature, and finally we call attention to a problem that might be caused by an overuse of knowledge in literature.

Two common aspects between Li and Swift:

1. Both authors kept pursuing knowledge in adverse circumstances

In a speech titled as "Poetry Can Be Resentful 詩可以怨," the well-known Chinese comparatist Qian Zhongshu 錢鍾書 quotes a famous ancient Chinese literary critic Liu Xie 劉勰's words produced when Liu was making comments on a writer Feng Yan (馮衍): "he has great interest in literature, but he suffers a lot of frustrations. His articles as 'Manifesto of My Aspiration 顯志' and 'Author's Own Preface 自序' are examples to show that 'an ill oyster could nurse a pearl 蚌病成珠'" (qtd. in Tian Huilan 327, my translation). Qian takes the sentence "an ill oyster could nurse a pearl" as an ingenious metaphor and says with sorrow that it has not been paid enough appreciation. Qian mentions in this speech that the distinguished French writer Flaubert also thinks that a pearl is produced by an ill oyster, and the works of a writer are the revelation of his pains and sufferings (see Tian Huilan 327). That is to say, in both eastern and western literatures, we have some authors who agree that the frustrated life of a writer often encourages or nurses him or her to write something that has depth and value.

We can find it is true in the cases of Li Ruzhen and Swift. In feudal China, as pointed out in Chapter Two, it was taken by nearly all intellectuals as the most admirable and glorious way of development to enter officialdom by passing the imperial examinations. Li was not successful in this way, yet he was a man of strong will. He decided to give the rest of his life to the study of various knowledge and writing. In the case of Swift, he was treated unfairly by the parties for which he had done so much. He hoped to become a bishop, but because of his severely satirical writings, it was impossible for him to obtain it (Hay 90). Both Li Ruzhen and Swift had the experience of poverty. In Li' s case, he spent his early years and late years in poverty. In Swift' s case, even in 1711 when he had the greatest influence on the ministry and was taken as the actual "ruler of the British nation" (Hay 87), "He would return from the Premier' s luxurious dinner-party to his lodgings, of eight shillings a week, and to save his bushel of coals pick them off the fire, which Patrick, the extravagant whelp, had placed there in anticipation of his master' s home-coming"(Hay 86-7). In such adverse circumstances, neither Li nor Swift ever stopped their pursuit of knowledge. They belonged to those people described by Mary Coleridge: "The fruits of the tree of knowledge are various; he must be strong indeed who can digest all of them." Li Ruzhen and Swift are strong in that even in adverse circumstances they did not give up their quest. They studied from the classics, they tried to learn scientific knowledge. Throughout their lives, they gained rich knowledge of the society in its full richness. They both used their knowledge in their literary works and produced great literary works (knowledge is one of the elements to contribute to it), which are the pearls nursed by the ill oysters.

2. Both authors meant to cause social reforms

Both Li and Swift were not just observers of society, they were also commentators. The purpose of their writing was not just to display their knowledge, but to instill reforms.

At the beginning of Chapter Two we have discussed the implied purpose of Li Ruzhen in creating *Flowers in the Mirror* is "暗寓勸善之意，不外'風人'之旨 [persuade people to be kind and follow good practices (Li Ruzhen 163)]" . Swift once wrote to Pope to tell him that his purpose in writing *Gulliver's Travels* was "to vex, rather than to divert the world" (qtd. in Eddy 194). To vex means to anger. Only by making the world angry it is then possible for it to think of reform. Diversion could not cause any change. Another quotation can also show Swift' s attention in causing reform. He wrote in one of his poems:

> As with a moral View designed
> To cure the Vices of Mankind:
> His Vein, ironically grave,
> Expos'd the Fool, and lashed the Knave.
> (qtd. in Rosenheim 226)

What reforms did they mean to cause?

In Li' s case, he wanted to improve the condition of women for he knew a lot about their sufferings and showed great sympathy to them. As observed by Hu Shi, "He is the first to raise this problem of women in China." (Hu Shi "Introduction to *Flowers in the Mirror* 鏡花緣的引論" 19)

Through his vivid description of the procedures of foot-binding applied to Lin Zhiyang, the merchant, in Chapter33, he angrily denounced this awful custom in old China. By making many girls as much learned ladies, he criticized the old idea of "A woman' s virtue is her ignorance." By working out the all inclusive decree made by the empress, Li called the attention of the public to the need of overall improvement of women's situation.

Li also hoped to change his society' s scale of values. By creating the Utopian Country of Gentlemen, Li set up a model country that is similar to some degree to Swift' s Houyhnhnmsland. Contrary to people in this world, merchants in the Country of Gentlemen ask as little money as possible for their goods while buyers try to pay as much as possible.

By means of the conversation between Tang Ao and the Wu brothers, Li criticized several bad customs in old China which are discussed in Chapter Two, III. These superstitiouscustoms include asking a geomancer to decide the location of tombs, unnecessary extravagance and overkilling aninals, and deciding children' s marriage by fortune-telling (合 八 字).

Yet, in Li' s book, there is never a country that does not have a monarch. In his mind, for a country to have a monarch is an unalterable principle. Even in the Utopian Country of Gentlemen, there' s a king, though he is a very good king and refuses bribery in a severe way ("臣民如將珠寶進獻，除將本物燒毀，并同典刑。 [If any subject should dare to present jewels to His Majesty as gifts, the gifts should be put to fire and the presenter should be put to law for punishment." (Li Ruzhen 86, ch.13)]

Gulliver's Travels is a work well-known for its satire. It aims at political situations in Europe that were unreasonable and that needed reform. Many characters in *Gulliver's Travels* could be traced to historical figures. Lock thinks that the people and events of the political world of *Gulliver's Travel's* are derived "from Swift' s knowledge of classical as well as contemporary instances of political wisdom and folly"(3). Through his attacks on the mean behaviors of the king and queen and their subjects in Lilliput, and on the projectors in the Grand Academy of Lagado who decoded text according to their political aims, Swift revealed his hatred toward these political tricks and looked forward to a better political situation. F. P. Lock points out that "Swift had a much wider aim in *Gulliver's Travels*: to attack not particular Whigs or Whig policies, nor even Whiggism, but the perennial political disease of which Whiggery was only a contemporary manifestation. Nor did he want his proposals for reform to be too closely identified with any party platform; he therefore focused his attention on issues that were as old as politics—the character of an ideal ruler, the evils of factions, and so forth"(2). Different from Li, Swift set up a Utopian country of Houyhnhnmsland where there is no monarch at all. Maybe he realized that only a democratic political system could be an ideal one for human beings.

Swift' s attack does not limit itself to certain people of a certain time and place. As observed by Lock, "for much of the book Swift seems intent on a satire, unlimited in its application by time or place, on the nature of man..." (68). In his Houyhnhnmsland, by creating the forms of Yahoo, Swift ridiculed the negative parts of human nature. The

Yahoos have the shape of human beings, yet they are mean and greedy. All bad aspects in human nature are displayed by them.

Swift also raised the problem of education in the last part of his book. He hoped that parents and the society could bring up and train the second generation in a reasonable way. He did not like to see the children spoiled. He hoped that, by reasonable training, the children would survive and contribute to the common benefit of society as a whole.

Four functions of knowledge in literature

1. The function of teaching

As discussed in Chapter One, we established that literature has two basic functions, to teach and to please. We believe that knowledge in literature serves both functions.

Both Li and Swift had, in the words of Dampier, the "hearty Zeal for the promotion of useful Knowledge" (see Mayer 189), and they were also trying to teach the reader some knowledge they thought necessary. This is particularly true in Li' s case, for he was deliberately doing so. He showed the reader how to solve mathematical problems, he showed the details of how some games were played, he showed his knowledge in classics through the debate between Tang Ao, Duo Jiugong the old seaman and Lin Zhiyang the merchant and the talented ladies in the Black-teeth Country. From our reading, we can find that he also meant to enrich the knowledge of his readers.

In Swift' s case, the teaching is done not in such an obviously pedagogic way. Yet the effect of teaching is achieved. After reading *Gulliver's Travels*, a reader could learn much about the politics in Europe. Swift opened the eyes of his reader to see the dark side of this political situation. Monarchs were ambitious to expand their boundaries as the king of Lilliput does. They played intrigues on their subjects as king of Lilliput does on Gulliver who has given him a lot of help. Religious factions quarreled over trifling matters as embodied by the quarrels between the Big-Endians and the Small-Endians. Knowledge of language can fulfil the function of teaching in the sense that the reader can learn how a language can be learned. The scientific knowledge employed by Swift also plays the function of teaching. Through the explanations of the mechanism of the flying island, the reader learns something about Newton' s theory of magnetism. He also learns those astronomical problems obsessing the mind of some scientists.

2. The function of pleasing

This function of pleasing means to bring entertainment to the reader. It can also be taken as a problem of readability. Readability is the quality of literature that makes the work interesting, not boring. Marina van Zuylen points out that it is "granted every epoch has its boring and unreadable novels" (1). Usually an author of literary works tries to achieve good readability of his/her work to attract readers and a masterpiece of literature is sure to have strong readability. Readability in literature can be attributed to different elements such as diction, plots and characters, the dialogues, etc. Does knowledge in literature contribute to readability? From the study of *Flowers in the Mirror* and *Gulliver's Travels*, we find that the answer is affirmative if the author can manoeuvre his knowledge properly.

It is clear that Li Ruzhen had this problem in his mind when he was composing his work. In a letter to his friend, Li said:

> 日前雖已完稿，因所飛之句，皆眼前之書，不足動人...... 第此間書不應手，頗覺費事。[Though I have completed the draft, I still feel the book titles used in the sentences given by the girls in the game to consume wine (see Chapter One, I) are all from the books in front of me and can not move the reader...Just because I can't find books that I really wanted here so it is quite hard for me to produce anything better. (qtd. in Wang Qiongling 370 my translation)]

So Li was aware that he needed to make his book more attractive, more readable. Actually, any Chinese reader with some knowledge of the Chinese language and classical works can find pleasure in reading those lines given by the ladies when they are consuming wine at the banquet and admire their wisdom and knowledge.

The scene of the banquet is an important part of Li' s book. At and after the banquet, the one hundred "Talented Ladies" displayed their talent and knowledge in various games as riddles, competition of the plant names, Madiao, archery, etc. The knowledge is introduced in the form of games and does bring entertainment to the reader and contribute to the function of "please."

In Swift' s case, his design of those exotic countries (in Lilliput Gulliver is a giant, but in Brobdingnag he is a pygmy; the inhabitants on Laputa are alienated and the inhabitants of Houyhnhnmsland are horses) based on his knowledge of classical and Renaissance works along with all the episodes and events happened in such funny situations does bring great pleasure to his readers. We can not forget the scenes when Gulliver is bound on the beach and he draws back a whole fleet for the king when he is in Lilliput, and he fights a mouse and rows in a big bottle when he is in Brobdingnag, because these scenes are so impressive and full of fun.

Swift' s scientific knowledge in physics, astronomy and geography brings another kind of entertainment to his reader, i.e. the entertainment of science fiction. Swift can well be counted as a forerunner of modern science fiction.

The functions of knowledge are not limited to these two. I think we can add two more.

3. The function of achieving verisimilitude

Verisimilitude is another quality of literature. According to *Current Literary Terms* edited by A. F. Scott, the definition given is "likely to be true. Having the appearance of truth. This quality can be achieved in literature by skilful selection and presentation of the material of human life"(303). We think writers usually hope to achieve verisimilitude for they would like to make their works more acceptable to the reader. An author can achieve verisimilitude in different ways and we believe proper management of knowledge also helps the author achieve this quality in his/her work.

In a letter to his friend, Li Ruzhen expressed his concern in verisimilitude. He wrote:

> 今擬所飛之句，一百人要一百部書，不准雷同，庶與“才女”二字，方覺名實相符 ......[I plan that in the game of consuming wine, each lady will make a sentence and in each sentence the quoted book should be different from the others, so the one hundred ladies will use one hundred books. Only in this way, the title of "Talented Ladies" is worthy. (qtd. in Wang Qiongling 388 my translation)]

This game is discussed in Chapter Two, I. The ladies raise several rules to make it quite difficult to apply. Besides knowledge of phonology, this game also requires knowledge of classical works. Li meant to make the title of "Talented Lady" plausible to his reader by letting the ladies complete the very hard job in an excellent way. Here he was attempting to achieve verisimilitude. If the ladies could only work out very simple sentences in this game, who will accept that they are "talented?" In that case, the reader will laugh at them as just having the title of "Talented Lady." In Chapter Two, IV, it is discussed that Li did something similar to Swift in trying to explain the mechanism of a flying chariot. Li' s aim is also to achieve some verisimilitude for he felt it necessary to say something about the mechanism of the flying chariot to make it plausible to his reader, as in Li' s time Western science and machines had been gradually introduced into China, though his knowledge in this field was not strong enough to let him give an explanation as plausible as the one given by Swift in describing the flying island. In the section of "Introduction of *Flowers in the Mirror* in Chapter Two, I pointed out that Li deliberately chose Wu Zetian' s reign (Wu is the only formal empress in the history of China and did a lot of things that were beyond expectations of common people) as the background for his book. There had never been any imperial examination particularly for women in Chinese history; if Li did want to put such a unique event in his book, this is the best possible situation in Chinese history for him to choose as the background to make this imperial examination for women more plausible for his reader. This choice of background also reflects the author's attempt of achieving verisimilitude.

Swift was good at achieving verisimilitude in his work. In his *A Dictionary of Literary Terms*, J. A. Cuddon underlines this aspect:

> If the writer has done his work well, then the reader will find the result an acceptable presentation of reality. Thus, works which may strain ordinary credulity (e.g. Rabelais's *Gargantua* and *Pantagruel*, **Swift's *Gulliver's Travels*** [we emphasize], Voltaire's *Candide*, Wells's *The First Men in the Moon*) will be as credible as those which purport to be mundanely realistic (e.g. most of the novels of writers like Jane Austen, Zola, Thomas Hardy, Henry James and Arnold Bennett). (740)

Here we don' t mean to discuss in detail all the methods Swift used in creating verisimilitude, but just want to point out that one of the methods is his employment of knowledge. For instance, his use of the knowledge of language (discussed in Chapter Three, II.) helps achieve verisimilitude, for, just as different languages characterize the countries of Europe, so his imaginery countries all have their own language and thus, the reader readily accepts the inhabitants' speech. The flying island Laputa is an important image in *Gulliver's Travels* as discussed in Chapter Three, IV. In Swift's time, modern science gained fast development, he felt it necessary to give an explanation to the mechanism of this flying island so that his reader would like to accept it as plausible. Also, Swift used his knowledge of geography available in his time to make sure that the location of any country in his work would not take the place of any known country. In this way he achieved verisimilitude in that nobody of his time could blame him for placing a country in his novel over a known country of his time. Swift achieved verisimilitude by skillfully arrange his knowledge and this helps him to attract more serious attention from his reader toward the whole work, because, as we discussed in Chapter Three, VI the sense of truth has an impact on the power of satire, which is the main purpose of *Gulliver's Travels*.

4. The function of reflecting the society

For the above three functions, because they are just summary of functions discussed in Chapters Two and Three, they do not take much space. For this fourth function, because I need to supply more materials to explain this point, it will take much more space.

Swift (1667-1745) lived in a period of time that went before a time of violent change. Peter Lane, in *The Industrial Revolution: The Birth of the Modern Age*, quotes C. Beard: "England for the first part of the eighteenth century was virtually a medieval England, quiet, primeval, and undisturbed by the roar of trade and commerce. Suddenly, almost like a thunderbolt from a clear sky, were ushered in the storm and stress of the Industrial Revolution" (1). Actually, it is not that sudden. As Lane quotes later on J. U. Nef's words:

> the rise of industrialism in Great Britain can be more properly regarded as a long process stretching back to the middle of the sixteenth century and coming down to the final triumph of the industrial state towards the end of the nineteenth, than as a sudden phenomenon associated with the late eighteenth and early nineteenth centuries.
> (qtd. in Lane 2)

Lane himself thinks that "the great change of the Industrial Revolution would not have taken place if there had not been a pre-existing platform from which the take off could be launched"(3). In *Gulliver's Travels*, we can see that modern science had already developed. Human beings had a much better knowledge of the world and themselves.

The use of telescope and microscope greatly contributed to this improvement of human knowledge. The inhabitants of Laputa and the projectors in the Grand Academy of Lagado give us very vivid, though somewhat twisted, picture of those scientists working hard at promoting their knowledge of the world. The flying island, with the detailed introduction of its mechanism shows us the possibility of mass production and marvelous achievements of modern science. People were even so brave to think of producing huge amount of books in a mechanical way.

Modern science and the Industrial Revolution brought great changes to the economy of England and by the eighteenth century England had become the most developed country in the world. Many agricultural countries were left far behind in the sense of scientific knowledge and industry.[1] It happens that a comparison of *Flowers in the Mirror* and *Gulliver's Travels* can rather properly explain this situation.

The eminent Chinese scholar Hu Shi has pointed out, with a heavy heart, the difference between the academic studies of the scholars in China and the scholars in European countries in the seventeenth and eighteenth centuries. He comments that the Chinese scholars buried themselves in the old papers. They tried to justify their suggestions with proofs they had found in the ancient books, while the scholars in European countries began to devote themselves to modern science and made a lot of important discoveries and inventions. What attracted their attention was the living and material world. They observed the world with the help of telescope and microscope, and they tried to understand the world better by way of experiment and field investigation. With their discoveries, man obtained better understanding of nature and society and became more powerful in making use of the resources of nature. Hu Shi works out a chronological table[2] to show this difference:

	中國 China	歐洲 Europe
1606	陳第古音考。 Chen Di wrote his *Gu-yin-kao*	

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[1] In *The Industrial Revolution*, Lane made a statement: "We have seen that by the eighteenth century the English economy was relatively more complex and developed than, say, the economies of present-day India or Nigeria" (60).

[2] The English is made by me by consulting several encyclopedias to find out the equivalent facts.

	(*Investigation of Ancient Phonetics*).	
1608		荷蘭人發明望遠鏡。 The Dutchmen invented the telescope
1609		格利賴的望遠鏡。 Galileo developed the astronomical telescope 解白勒(Kepler)發表他的火星研究，宣布行星運行的兩條定律。 Kepler published his study of Mars and declared the first two laws of planetary motion.
1610	黃宗羲生。 Birth of Huang Zongxi (thinker and historian)	
1613	顧炎武生。 Birth of Gu Yanwu (thinker and scholar)	
1614		奈皮爾(Napier)的對數表。 Napier published his *Description of the Marvelous Canon of Logarithms.*
1619	王夫之生。 Birth of Wang Fuzhi (thinker and scholar)	解白勒的行星第三律。 Kepler's third law of planetary motion.
1618-21		解白勒的哥白尼天文學要旨。 Kepler published his *Epitome of Copernican Astronomy*
1623	毛奇齡生。 Birth of Mao Qiling (scholar)	
1625	費密生。 Birth of Fei Mi (scholar)	
1626		倍根死。 Death of Bacon
1628	用西法修新歷。 Calendar was revised according to the western method.	哈維(Harvey)的血液運行論。 Harvey discovered the truth of the circulation of the blood.
1630		格利賴的天文談話。 Galileo wrote his *Dialogue Concerning the Two Chief World Systems-Ptolemaic and Copernican.* 解白勒死。 Death of Kepler
1633		格利賴因天文學受异端審判。 Galileo on trial by the Inquisition, and formal guilty of having "held and taught" the Copernican doctrine.
1635	顏元生。 Birth of Yan Yuan (thinker and educationist)	
1636	閻若璩生。 Birth of Yan Ruoqu (scholar)	
1637	宋應星的天工開物。 *Tian-gong-kai-wu* (a book about technology and techniques)by Song Yingxing.	笛卡兒(Descartes)的方法論，發明解析几何。 Descartes wrote his *Discourse on Method* and laid foundation for analytic geometry.
1638		格利賴的"科學的兩新支"。 Galileo published his *dialogue Concerning Two New Sciences.*
1640	徐霞客(宏祖)死。 Death of Xu Xiake (i.e. Xu Hongzu, traveler	

	and geographer)	
1642		格利賴死，牛敦生。 Death of Galileo and birth of Newton
1644		格利賴的弟子佗里杰利(Torricelli)用水銀試驗空氣壓力，發明氣壓計的原理。 Torricelli, Galileo's student, worked with the mercury to observe the air pressure and invented the barometer.
1655	閻若璩開始作尚書古文疏證，積三十餘年始成書。 Yan Ruoqu started to make annotations on *Shang-shu-gu-wen* and completed the project 30 years later.	
1657	顧炎武注韻補。 Gu Yanwu made annotations on *Yun-bu* (*Supplement to Phonology*)	
1660		英國皇家學會成立。 The Royal Society of London was established. 化學家波耳 (Boyle)，發表他的氣體新試驗。(波耳氏律。) Boyle's experiments on the properties of gases and boyle's law.
1661		波耳的“懷疑的化學師”。 Boyle published his *The Sceptical Chemist.*
1664	廢八股。 Abolition of Ba-gu-wen (eight-part essay. A literary composition prescribed for the imperial examination, known for its rigidity of form and poverty of ideas)	
1665		牛敦發明微分學。 Newton laid the foundation of calculus.
1666	顧炎武的韻補正成。 Gu Yanwu finished his *Yun-bu-zheng* (*Supplement and Corrections on Phonology*).	牛敦發明白光的成分。 Newton found the spectrum of white light.
1667	顧炎武的音學五書成。 Gu Yanwu finished his *Five Books on Phonology.*	
1669	復八股。 Restoration of Ba-gu-wen.	
1670	顧炎武初刻日知録八卷。 Gu Yanwu published the first eight volumes of *Ri-zhi-lu* (totally 32 volumes)	
1675		李文厚用顯微鏡發見微生物。 Antonie van Leeuwenhoek, a Dutch scientist, developed techniques for simple microscopes and discovered microrganisms.
1676	顧炎武日知録自序。 Gu Yanwu wrote "Preface" for his *Ri-zhi-lu.*	
1680	顧炎武音學五書後序。 Gu Yanwu wrote an epilog for his *Five Books on Phonology.*	
1687		牛敦的杰作“自然哲學原理”。

Newton published his important work *Principia*.
(*Collected Works* vol 3, 112-5)

The names appear in the chronological table are all the most important scholars in the academic field of China and European countries. After presenting the table, Hu Shi makes a comment:

> 我們看了這一段比較年表，便可以知道中國近世學術和西洋近世學術的劃分都在這幾十年中定局了。在中國方面，除了宋應星的天工開物一部奇書之外，都祗是一些紙上的學問；從八股到古音的考證固然是一大進步，然而終久還是紙上的工夫。西洋學術在這幾十年中便已走上了自然科學的大路了。顧炎武、閻若璩規定了中國三百年的學術的局面；格利賴、解白勒、波耳、牛敦規定了西洋三百年的學術的局面。[Having read this chronological table, we can understand these several decades had fixed the frame for the Chinese modern academic research and the western modern academic research. As far as the Chinese academic research is concerned, except for *Tian-gong-kai-wu* by Song Yingxing which is a marvelous book, all study was based just on written texts. It is a great progress that the scholars turned from Ba-gu-wen to the investigation into the ancient phonology, yet this study was still based on written texts. In the above mentioned several decades, academic research in Europe had gone on the broad road of natural science. Gu Yanwu, Yan Ruoqu established the norm for the three hundred years' Chinese academic research, while Galileo, Kepler, Boyle and Newton did the same to the Western academic research. (*Collected Works* vol 3, 115 my translation)] [1]

It happened that Swift's time is at the right time in this chronological table. In *Gulliver's Travels*, we can read a lot about this modern science. We observed the inhabitants on the flying island of Laputa with their superior knowledge of mathematics and their ability to observe the universe through a telescope. The projectors in the Grand Academy of Lagado are doing every kind of experiment (even though them seem so strange to a visitor as Gulliver, yet, as discussed in Chapter 3, they all have something reasonable in themselves), and they even worried about the doom that might come to this world. What a vivid picture of the advance of modern science in European countries! On the other hand, we can hardly see anything about these elements of modern science in Li' s book. Li' s time was a hundred years later than Swift' s, but we still see what Hu Shi describes in his chronological table. Scholars were still much interested in the old books and the promotion of modern science is out of the question; even if they (as Li himself) were interested to obtain some natural knowledge, their knowledge in this field is shallow. The scholars in Li' s book never worried about the doom of the world. It is worth pointing out that in Li' s time, this involvement in various literary games was not a single case. Li was a typical intellectual, and many other intellectuals were also involved in these games. A lot of time and energy and talent were spent in this way without doing some practical things. Finally, this situation contributed to the fall of the Qing dynasty, and repeated the fall of the Ming dynasty (the dynasty before the Qing dynasty in which Li lived) when the game of Madiao was considered as one of the reasons for the fall of the dynasty (see Madiao in VI. Chapter Two of this thesis). As Swift was the first person to explain the flying vehicle with the findings of contemporary science (see Asimov 144), Li might be the first person in China to try to explain the mechanism of a flying vehicle. As he had learned some scientific knowledge, he hoped to get away from the pure mythology and tried to explain in a scientific way the flying vehicle, but his explanation (see IV, Chapter Two of this thesis) is so powerless. His flying vehicle is made of wood, and what makes the carriage fly are many wheels made of copper! Compared with Swift' s explanation of the mechanism of the flying island, Li' s knowledge of this problem is too limited. This example also shows the distance between the Chinese academic study and the European academic study. The different focus in academic study in China and its effect on the survival of the nation could be seen when the British gunboats forced China to open its door in the 1840s, during which period Chinese scholars were still burried in ancient books.[1]

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[1] We believe that scientific knowledge is just one of the aspects of the sophistication of culture, though an important one. Hu Shi here points to the historical situation that the development of modern science in Europe, especially in England in the 17th century made the European countries much more powerful in economy, transportation and military arts which were some important causes for the invasion and colonization of the European countries in the East and Americas. The different focuses of academic study embodied in the two works (in Li's case, the study of written texts; in Swift's case, the study of science) reflected this historical situation.

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[1] The study of science led to the fact that Britain became one of the most powerful countries in the world. It was much more advanced militarily than China. However, we realize that military power was not the only reason for China's defeat in the wars in the 19th century.

The examples of flying vehicles also prove that a person' s knowledge is limited by his time and society as suggested by the sociology of knowledge.[1] Swift provided an explanation consistent with the mechanism of the flying island with the scientific findings of his day. He made use of the theory of magnetism to make the island fly, and this was much more advanced than Li' s copper wheels, but it was still unthinkable to use nuclear power to drive his flying island. Li, though living one hundred years later than Swift, could not learn the necessary modern scientific knowledge to make his flying vehicle more realistic, for in his society, such knowledge was not available yet.

We can conclude by observing that the two books reflect their respective societies vividly and truthfully. Swift was living in a society that was facing violent changes, whereas Li was living in a society that was going on its traditional way and was not aware of the important changes in the world. Though there had been a little bit of introduction of Western knowledge, the emperor Shizong (reign 1723-1736) ordered to close the door of the country and refused to accept anything from the West. This situation lasted until 1840, the year of Opium War (see Wang Qiongling 450).

The problem of over displaying knowledge in literary works

A literary work is not an encyclopedia. Proper employment of knowledge in literary work is considered helpful to fulfil the functions of teaching, pleasing, achieving verisimilitude while overuse of knowledge in literary work is considered harmful to the literary qualities of the work. The use of knowledge in literary works should follow the principles of literature. [2]

Li, in this aspect, went too far. He enjoyed his knowledge and hoped that it could last long after his death. He exhibited too much knowledge in *Flowers in the Mirror*. Even though he worked out all the plots and the various characters as a stage to contain such a huge quantity of knowledge, he was not always successful. He was criticized by many critics to have over displayed his knowledge in this literary work and have hurt the literary quality of the novel.

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[1] See Chapter One, II.

[2] Lu Xun 魯迅, though admitting the merits of *Flowers in the Mirror* by saying "惟經作者匠心，剪裁運用，故亦頗有雖爲古典所拘，而尚能綽約有風致者 [with the author' s ingenuity and after his much pruning and cultivating, we can still find much that is graceful and charming in this novel though the author is bound to some degree by classicism (Lu Xun 403, my translation)], " pointed out the overuse of knowledge in this work: "蓋以爲學術之匯流，文藝之列肆，然亦與萬寶全書爲鄰比矣 [it is a convergence of knowledge and a store of arts, but thus it is quite close to a practical encyclopedia. (Lu Xun 403, my translation)] "

In *Flowers in the Mirror*, the personality of many characters are not fully developed, the exception being a few such as Duo Jiugong the old seaman, Lin Zhiyang the merchant. This lack of personality is considered by scholars as a break of literary principle. In this novel, there are one hundred talented ladies (only a few of them have developed personality) and other male characters who are only puppets controlled by the author to deliver knowledge. Wang Qiongling points out:

> 但是論其形貌，却是百人一面，無甚差別：論其個性，則大同小异，乏善可道：論其情感，則自幼婚配或順服父兄，可謂蒼白已極。 [When we talk about their features, the one hundred shared the same face, without remarkable distinction. When we talk about their personality, they all have similar character, without clear individuality. When we talk about their emotional life, they don't seem to have one. Either they had been bound to a marriage since childhood or they obeyed their fathers or brothers in deciding their marriage " (Wang Qiongling 602, my translation).]

Also, in *Flowers in the Mirror,* knowledge is used at the expense of plot. Most ladies and their family members are loyal to the Tang Dynasty and they worked hard to overthrow the reign of the Empress Wu Zetian. Finally they achieved this purpose but quite a few of them even lost their lives. Yet to create the spectacular event of one hundred ladies getting together to express their (the author' s) knowledge, Li lets them all eagerly take part in the imperial examination for talented ladies given by Wu Zetian the empress whom they meant to overthrow and take the tittle as a great honor. Some of them, anticipating failure, even wanted to die (see Li Ruzhen 490-1, ch 69).

Quoting Yang Maojian 楊懋建, a scholar in the Qing Dynasty, Wang Qiongling puts the problem succinctly:

> 嘉慶間新出《鏡花緣》一書，《韵鶴軒筆談》亟稱之，推許過當。予獨竊不謂然。作者自命爲博物君子，不惜獺祭填寫，是何不徑作類書而必爲小說耶？即如放榜謁師之日，百人群飲，行令糾酒，乃至累三、四卷不能畢一日之事，閱者昏昏欲睡矣！作者猶津津有味！何其不憚煩也？ [In the reign of Jiaqing, there's a newly published book named *Flowers in the Mirror*. It was highly regarded by the author of

> *Yun-he-xuan-bi-tan* (*Notes made in the Pavillion of Rhymes and Cranes*). His praise of the book is overdone. I personally have different opinions. The author of *Flowers in the Mirror* regards himself as having wide learning and filled his book with all kinds of knowledge. Why does not he just write some reference books? For example, in the novel, when the winner list was published and the hundred ladies met in the garden of their master, they all drink according to the rules of games to consume wine. These games lasted on and on and three or four chapters could not finish describing what happened in a single day. The reader was bored to sleep, yet the author still continues with keen pleasure. Why isn't he afraid of boring his readers? (qtd. in Wang Qiongling 603, my translation)]

In our opinion, this attack on Li is somewhat unwarranted, but it does have its reason. We generally take this banquet scene to be successful in introducing knowledge and bringing pleasure to readers. But to some degree, in his eagerness to display knowledge, Li neglected the principles of literature. This problem is surely one of the reasons for the fact that Li Ruzhen is not taken as a first rate writer in the Chinese literary heritage.

On the other hand, we do not see this problem in Swift' s *Gulliver's Travels*. Swift was not criticized by any critics in this way. His exhibition of knowledge meets the need of his literary requirement. His knowledge is well knitted with the development of the plot, and is displayed in a natural way so that the reader will not feel any aversion. Like Li, Swift also made use of his multifarious knowledge in this work, yet his control is very proper. Different from Li, he made use of knowledge only when it was necessary. When a reader reads Gulliver telling the king of Brobdingnag and his master in Houyhnhnmsland the political situation in his homeland and Europe, his description of the scientific observation by the inhabitants on the flying island of Laputa and the projects carried on in the Grand Academic of Lagado, he will not find anything self-contradictory, he only feels the satire made by the author. Swift's skilful use of knowledge in *Gulliver's Travels* can be one of the reasons that make this work a first rate work in English literary heritage. Edward W. Rosenheim, Jr. comments that "Swift' s greatest writings (*Gulliver's Travels* is surely among them—my words) are as notable for artifice as for argument "(6). Marguerite Feitlowitz also comments that "*Gulliver's Travels* was an overnight success, a runaway bestseller. And why not? Not only did it smack of mystery and political, social, and sexual scandal, but it' s often hilarious, and just about always brilliant"(1).

Final words

We have demonstrated that the use of knowledge in literature, in spite of a common purpose, can vary considerably. In the hands of a skilled writer, the "to teach and to please" functions become wholly integrated. In the hands of a writer preoccupied with other purpose, the teaching function surfaces to the detriment of the pleasing function. Skillful employment of knowledge in literature also helps authors to achieve verisimilitude, which, once established consistently in a literary work, enhances the power of it. Careful readers can also find traces and reflections of time from knowledge used in literature and obtain a better understanding of the society in which the author is living. It is true that "styles of expressions and the character of ideas or systems of thought are related to different social contexts. "[1] Li' s China was going on its traditional way and was not aware of the important changes in the world (though there had been some brief communications with the West). Li' s interest was still in the traditional scholarly study and games usually played by intellectuals. He saw the importance of modern scientific knowledge, but his knowledge in this field was shallow. He also promoted social reform, especially about women' s position, but his work is less influential than Swift' s.[2] He mainly followed the traditional Chinese literary heritage of persuading people to be kind and follow good practices. On the other hand, Swift wrote at a time of considerable scientific activity and , as we have also shown, knowledge in these conditions becomes subservient to the satirical intent. It is incorporated as to provide an almost seamless authoritative voice that could only point to the negative or positive aspects of life in his day.

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[1] *Harper Dictionary of Modern Thought* 334.

[2] There are other reasons. Li' s work is less successful than Swift' s just as his work is less successful than Cao Xueqin' s *A Dream of Red Mansions* 紅樓夢. That is to say, his overall artistic ability did not match that of Swift and Cao. This ability can be embodied in the aspects of the comprehensive stucture of the work, the creation of characters, the knitting of plots, etc. Other aspects needed to be considered are the readership, academic canonization, etc.

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